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African Americans suffer disproportionately from higher rates of diet related chronic diseases compared with Caucasians. The purpose of this project was to design and implement a nutrition education intervention to reduce cardiovascular disease risk factors among low-income, African American caretakers of young children. Study participants were low-income, African American residents of Guilford County, NC, and primary meal preparers and caretakers of a child ≤ 12 years of age. Participants (N=14) were recruited from community agencies (Guilford County WIC; Department of Social Services) and through a church with a high African American population. Participants received nutrition education classes that addressed barriers to healthy behaviors. Pre and post tests were given to assess changes in nutrition knowledge, attitudes, and self-efficacy regarding dietary behavior. Overall, pre and post test results indicated a significant increase in nutrition knowledge, self reported confidence with dietary behaviors, and decreased BMI. Additionally, participants provided evaluative feedback concerning the intervention structure and content. The learning activities, classroom discussions, and teaching materials were highly preferred among more than half of participants; however, the time commitment was among the least preferred characteristic of the intervention. Findings from this project will provide insight for a larger scale cardiovascular disease risk intervention among the target population.

A TAILORED NUTRITION INTERVENTION TO REDUCE CARDIOVASCULAR DISEASE RISK IN LOW-INCOME AFRICAN AMERICAN WOMEN

by

Kandis P. Ingram

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Approved by

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Committee Chair

APPROVAL PAGE

This thesis has been approved by the following committee of the Faculty of The Graduate School at the University of North Carolina at Greensboro.

Committee Chair _____

Committee Members _____

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CHAPTER I

LITERATURE REVIEW

Health Disparities

Health disparities refer to inconsistencies in health status among populations that differ by race, gender, and socioeconomic status (SES).[1] According to the NIH Working Group on Health Disparities; "disparities include the incidence, prevalence, mortality, and disease burden associated with poor health outcomes".[1] Reducing health disparities is a public health concern in the United States. Health disparities are evident among populations in the United States especially with chronic diseases such as cardiovascular disease (CVD). One of the objectives of Healthy People 2010 is to eliminate racial and ethnic CVD disparities.[1,2] Socioeconomic status, defined by income and education level is a key determinant of health disparities and is a primary explanation for the observed cardiovascular health inequality among African Americans. Additionally, single-parent households contribute to greater numbers of African Americans who live at or below the poverty line in comparison to other ethnic groups.[2,3] Cardiovascular disease affects more African Americans in terms of incidence, prevalence, and mortality in comparison to White and Hispanic populations.[4] Specifically, African Americans are more likely to suffer disproportionately from stroke, high blood pressure, and coronary heart disease

and are more likely to die from CVD complications compared to White and Hispanic populations.[3,4] These outcomes warrant CVD risk prevention studies that are designed to address CVD health among African Americans.[1,3,5,6]

CVD and Associated Risk Factors Among African Americans

Health behaviors significantly affect overall health status. Modifiable risk factors for heart disease such as obesity, poor diet, smoking, and low physical activity contribute to increased risk for cardiovascular disease. African Americans are particularly at high risk for CVD because of unhealthy eating habits and lack of daily physical activity. Among all African Americans, 25.8% of deaths during the years 2003-2004 were due to heart disease; specifically, 26.9% of these deaths were among African American women.[7] Among non-Hispanic black Americans age 20 and older, 67% of men and nearly 80% of women are overweight (BMI of 25 or higher). Of these, 30.8% of men and 51.1% of women are obese (BMI of 30 or higher).[4] Approximately 20% of all African Americans smoke and are physically inactive (48.7%).

High fat and low dietary fiber intake are common among ethnic minorities.[8] A cholesterol screening program conducted with Hispanic (N=1425), African American (N=561), and White (N=7817) men and women was designed to investigate how fat intake differs among a diverse audience in New England. Using food frequency questionnaires, researchers assessed food choices, meal preparation, and added fat intake to derive a food habits questionnaire (FHQ) summary score which was indicative of a high or low fat diet. In particular, African American women had higher FHQ summary

scores in comparison to Caucasian and Hispanic women which meant that they were least likely to modify their diet in order to decrease dietary fat intake.[24] Overall, African Americans were least likely to avoid frying foods and avoid adding fat to foods for flavor compared to Hispanic and White participants. The authors concluded that nutrition education programs must be developed and specifically tailored especially for African Americans to reduce fat intake by emphasizing how to avoid frying foods, choosing leaner meats, and including more daily servings of fruits and vegetables.[8]

Increased fruit and vegetable consumption as well as frequent physical activity are among current recommendations to reduce CVD risk among African Americans.[4] Although many people are aware of these recommendations; they are often confronted with the challenge of consistently incorporating these practices into their daily habits. Therefore, nutrition education interventions must be designed and conducted to offer support to diverse audiences to make healthier choices.

Tailoring Nutrition Education Interventions for Low-Income Diverse Audiences

Reducing CVD incidence is important especially among diverse populations that exhibit greater prevalence of CVD risk factors. Specifically, there are few nutrition education materials that are designed for low-income diverse audiences.[9,10] Formative research is beneficial to the development of nutrition education materials and allows program developers to tailor health messages to fit the needs of specific groups.[11] Strolla et al. describe qualitative and quantitative methods used to tailor the *Your Healthy Life* nutrition education intervention materials for low-income Hispanic and non-Hispanic

men and women.[12] Three data collection processes including focus groups (n=474 participants), telephone surveys (n=334), and confirmatory focus groups (n=39 participants) were conducted to determine the main influences of food-related choices, motivators and barriers associated with dietary change, food beliefs and knowledge, and preferences in educational materials.

Respondents expressed dislike for the taste of low fat foods and described common barriers and motivators associated with eating healthy foods. Common barriers were: price and preference of fruits and vegetables, frequency of meals eaten outside of the home, time constraints, cooking skills, and lack of knowledge about estimating portion sizes and fat content of foods. Common motivators of healthy eating included disease prevention, weight loss, and improved self-esteem. Strolla et al. concluded that using qualitative and quantitative methods provided detailed information about the target audience to create teaching materials and learning activities that addressed specific barriers to healthy behavior that were expressed by a low-income, ethnically diverse audience.

Overall, there is a general consensus that health promotion interventions should be culturally sensitive.[13,14] A multidimensional model that has been used to tailor interventions and increase cultural sensitivity was developed by Resnicow et al. and applied to the Healthy Body/Healthy Spirit nutrition and physical activity education project.[13] Eight focus groups (conducted with N=29-33 African American men and women per group) guided the formative research process of the Healthy Body/Healthy

Spirit project.[13] During these focus groups, participants evaluated various foods and physical activities in terms of how common they were within African American culture

This approach allowed researchers to develop intervention materials that offered specific suggestions for preparing healthier versions of foods, such as turnip greens and sweet potato pie that were determined to be more common among African Americans.[13] Also, Resnicow et al. reported different ways to increase frequency of daily physical activity among African Americans by suggesting sports and leisure activities that focus group participants characterized as common among African American communities (basketball, biking, and doing housework). Focus group results indicated the importance of including issues concerning body image, safety concerns while exercising in neighborhoods, and time constraints due to work and home life responsibilities. Furthermore, the authors addressed limitations such as time and income, in order to enhance the potential long term adherence to positive health behaviors.[13]

The use of culturally sensitive intervention materials can change the perception that healthful eating patterns require African Americans to give up part of their cultural and social norms to conform to the dominant culture. Specifically, culturally relevant educational materials may persuade diverse audiences to make healthier choices that are feasible within their environment. Under these circumstances, nutrition education programs may help to identify CVD risk and provide insight concerning how to adopt healthy lifestyle behavior.

Diet and Physical Activity Behavior Among African American Women

Epidemiological research studies show that CVD risk is high among African Americans and most notably African American women who are more susceptible to CVD due to lifestyle habits. In addition to decreased physical activity and low fruit and vegetable intake, nearly 17% of African American women currently smoke and 60% do not engage in weekly light-moderate physical activity.[4] From these statistics, it is evident that CVD risk factors continue to be disproportionately higher among African American women compared to other ethnic groups.

Survey data show that many African Americans do not meet the recommended number of daily servings of fruits and vegetables.[15] Baseline findings from the National Cancer Institute "5 A Day" program shows that African Americans consume more fruit in the form of fruit juice and fewer servings of vegetables compared to Caucasians.[15] These data show that African American men consume 3.3 servings of fruit and vegetables per day and African American women consume 3.5 servings of fruit and vegetables per day which is less than the 5-9 daily serving recommendation for fruit and vegetable consumption.[15]

Low-income women are more likely to be physically inactive due to perceived barriers associated with exercise such as lack of energy, time, and balancing household and work related responsibilities.[16] These barriers were explored in a series of three focus groups conducted with a diverse audience of (N=14) African American, Latina, and Caucasian women who were caretakers of children. Content analysis indicated a range of issues that women considered as barriers to physical activity such as culture, lack of childcare, and fatigue.[16] African American and Latina women indicated that daily work and home related activities limited their ability to find time to pursue exercise activities during their leisure time. Additionally, these women participated in physical education activities in school during childhood, however they did not engage in structured physical activity as adults because of cultural norms and family environment.[16] Younger, single mothers indicated that lack of childcare limited their ability to exercise during the day. Fatigue was a barrier among low-income women in this study who prioritized home and work-related responsibilities and often struggled with exhaustion from balancing these responsibilities.[16] Hoebeke et al. indicated that physical activity interventions for low-income women should emphasize inclusion of their families and involve home/neighborhood centered walking programs that provide free childcare; as these issues were stated as barriers. Low fruit and vegetable consumption, high fat intake, and physical inactivity are associated with increased CVD risk; however, these factors may be attributed to a variety of socioeconomic and environmental issues that increase CVD disparities among African American women.

Need for CVD Prevention Interventions Among African American Women

In a systematic review concerning cardiovascular health care interventions, Davis et al. concluded that there is a limited amount of literature that addresses disparity reduction especially among African American women.[17] In particular, studies have focused on increasing knowledge and risk factor recognition about CVD by promoting disease awareness with the goal of reducing CVD risk among minority populations. However, although agencies such as the American Heart Association and the Centers for Disease Control and Prevention have provided extensive disease awareness promotion, incidence and prevalence of CVD among African American women continues to soar compared to women of other racial groups. With this in mind, researchers have tailored nutrition and physical education interventions to be culturally sensitive to help African Americans adopt healthier lifestyles that involve increased fruit and vegetable consumption, physical activity, and reduced cigarette smoking.[5,13] Culturally relevant lesson plans and teaching materials have been shown to reduce CVD risk among low-income African Americans.[18-20] However, there are few interventions that are culturally appropriate for low-income African American women who are caretakers of young children.[2]

Although researchers have documented the need to address CVD prevention, the complexities surrounding health disparities due to low SES, education level, and gender present difficulties with designing multi-faceted interventions that reduce CVD risk while increasing self-efficacy in health promotion behaviors.[2,21] In order to target barriers to healthful dietary and exercise behaviors, interventions must not only focus on CVD

prevention strategies but also encourage practical skill development such as reading food labels, purchasing and preparing healthy foods on a limited income, and effective meal planning to promote cardiovascular health among African American women. Effective nutrition education programs are needed to provide accurate and relevant information about CVD risk and prevention.

Needs Assessment Among African American Women

In 2006, The American Heart Association conducted a cross-sectional telephone based survey to evaluate changes in knowledge of CVD risk factors over time among a random sample of African American, Hispanic, and Caucasian women who were at least 25 years of age (N=1005). Primarily, the purpose of the study was to compare results of a telephone survey conducted in 2006 with survey data collected in 2003, 2000, and 1997 in order to track changes in awareness, knowledge, and perceptions associated with heart disease among a diverse population. Also, researchers investigated whether misconceptions from media sources presented a barrier to adoption of healthy behaviors.[3]

When responding to general statements concerning CVD prevention, 57% of all participants surveyed in 2006 considered themselves to be well informed about heart disease which was significantly greater than in 2003 (46%), 2000 (34%), and 1997 (30%). However, of the participants who considered themselves well informed about heart disease in 2006, African American and Hispanic women were less likely to identify heart disease as the leading cause of death for women (68% vs. 31% and 29%). This

knowledge gap indicated that participants were not familiar with the risk of heart disease among women. Overall, more than half of all responders reported uncertainty in the following areas: how to control blood pressure (60%), which foods have cardioprotective benefits (69%), how to control weight (66%), and how much exercise is needed to prevent heart disease (61%).[3] Findings from this study indicated that although awareness of CVD has increased among a diverse population of American women, there is a considerable amount of uncertainty concerning daily preventative measures that lead to a reduction of CVD risk. Therefore, researchers must design nutrition interventions that not only increase CVD risk awareness, but also emphasize the development of health behaviors that reduce CVD incidence.

Nutrition Interventions with African American Caretakers

Community based research programs are useful to reduce health disparities because they make use of cultural and social norms that are highly regarded among African American caregivers.[13,22] In particular, community and church-based interventions have resulted in decreased body weight,[35] body fat,[36] and increased physical activity [25] among African Americans. Additionally, community based programs contribute to building trustworthy relationships between researchers and members of the community, and decrease barriers to health behavior compliance.[26]

Previous studies indicate that interventions for African American caregivers should provide a substantial amount of information concerning how to avoid CVD risk factors and practical ways to make small, everyday changes to improve health.[27] While

previous researchers have investigated knowledge and disease prevention among African American women, there is a considerable gap in the literature that does not clearly address how African American caretakers can make changes to their diet, physical activity level, and health behaviors in order to reduce their risk for CVD.

Effective interventions for African American caregivers are needed to counteract obesity and CVD trends.[28] Attitudes about nutrition and weight loss were evaluated among a sample of (N=147) low-income African American caretakers to investigate the effect of a nutrition and physical activity intervention on body weight.[28] Women were recruited from community agencies including WIC clinics, community centers, and churches in Austin, Texas to participate in eight weekly weight loss classes (N= 114 women) or provide demographic information as part of the comparison group (N=33 women). The intervention group received information about weight loss, portion sizes, how to interpret nutrition labels, and how to cope with emotional eating behaviors. Anthropometric measurements (percent body fat, BMI, and waist circumference) and dietary assessment (24 hour dietary recall) were measured on all participants. Among participants who lost weight during the intervention, (N=60 women), declines in body weight (-4.7 kg vs. -0.5 kg), body fat percentage (-1.8% vs. -0.5%), and waist circumference (-4.9 cm vs. -2.0 cm) were significant when compared to the control group during the post intervention time point. Survey data concluded that favorable attitudes toward healthful eating improved while attitudes toward emotional eating declined.[28] Jordan et al. concluded that using nutrition education to address attitudes toward health

behavior and perceived barriers is a useful way to improve health status among low-income African American caretakers of young children.

Similarly, socioeconomic factors and food insecurity among low-income African American caretakers affects weight and health status.[29] Within food insecure households, the cost of fresh fruits and vegetables is a barrier to their consumption. In contrast, the low cost of calorie dense, high fat foods is an important contributing factor to increased weight gain among this group.[29] Weerts et al. describes a community-university partnership program that was designed to alleviate food insecurity and promote weight loss among African American caretakers of young children. Twenty women were recruited to participate in the 3-month study and received the intervention treatment or were assigned to the control group. The intervention group received personalized nutritional counseling sessions conducted by a certified health educator, grocery store gift cards and instruction to use them to purchase fruits and vegetables, and handouts that reinforced the importance of fruit and vegetable consumption and weight loss strategies.[29] The control group received the health education handouts and gift cards and were instructed to use the gift cards to purchase any type of groceries.[29] Significant improvements in BMI (-1.10 kg/m^2 vs. +0.68 kg/m^2; p=.008), mean weight loss (-6.05 kg vs. +3.68 kg; p=.008), and increased raw fruit and vegetable consumption (1.29 c/d vs. 0.15 c/d; p=.042) were reported among the intervention group during the baseline to month 3 time point compared to controls. Also, the participants reported that the gift cards assisted in offsetting the cost of fresh produce and increased their ability to purchase fresh produce throughout the month. Furthermore, this study illustrates that

nutrition knowledge and the ability to purchase healthy foods is needed to overcome barriers to healthy food consumption.

Researchers have described ways to increase access to healthy foods by addressing economic and environmental barriers.[29,30] Increasing access to healthy foods among low-income populations supports their adoption of health promoting behaviors. Kennedy et al. described the feasibility of a community based food delivery intervention conducted in East Baton Rouge Parish, LA to increase healthy food consumption and promote weight loss among African American women. Forty women were recruited and assigned to either a control or intervention group. All participants received nutrition education materials and blood pressure and weight measurements were recorded at baseline and after the intervention. In addition, the intervention group received classroom instruction that correlated with the distributed learning materials, participated in cooking demonstrations, and kept a seven-day food and exercise diary. The control group received only nutrition education materials. All participants received cash incentives, fresh fruits and vegetables during classroom sessions, and were given the opportunity to receive free fresh produce from a mobile food store stationed at a community center. Kennedy et al. reported improvements in blood pressure and weight status evidenced by decreased BMI among the intervention group. Additionally, this group reported increased fruit (2.9 servings/d vs. 2.5 servings/d) and vegetable (2.9 servings/d vs. 1.1 servings/d) consumption based on FFQ analysis conducted at baseline and post intervention. Quality of life measures that quantified improvements in self-esteem, and emotional well-being were increased in the intervention group post

intervention. Kennedy et al. concluded that diet quality, eating habits, and weight loss or maintenance are moderated by nutrition education and access to healthy foods. In particular, studies that are pilot tested with small sample sizes and show significant health improvements have the potential to be implemented on a larger scale.

Social Cognitive Theory Based CVD Risk Interventions

Current nutrition education efforts to improve cardiovascular health among African American women have been conducted using community based study designs that involve various recruitment strategies. However, there are few research studies designed to improve CVD health using a theory based approach. Moreover, existing research studies that incorporate Bandura's Social Cognitive Theory (SCT) constructs into their methodological design are not focused exclusively on reducing CVD risk among low-income African American women. Theoretical models such as SCT are especially useful for interventions that are designed to initiate behavioral change. Additionally, SCT constructs such as self-efficacy describe one's ability to perform a behavior and overcome specific obstacles associated with the behavior while expectancies refers to the values that are associated with a particular outcome.[31,32] These constructs are important in terms of their proposed effects on long-term behavior change.

Cornell et al. conducted a community health project to reduce CVD risk among low-income, rural African Americans. The Uniontown Project in Alabama was a multi-phase study that was facilitated by lay health advisors to increase knowledge, skills, and access to community resources in order to improve cardiovascular health. Primarily,

Cornell et al. used formative research approaches to assess the needs of low-income residents of a rural community (population size = 1636 people) in order to launch a community-wide intervention to reduce CVD risk. The formative research component involved a variety of methods including focus groups (N=144 people; 71% women) and surveys (N=313; 75% women), Cornell et al. identified and prioritized community health issues expressed by community residents. Outcomes from the formative research activities illustrated the need for an intervention designed to increase knowledge about CVD risk factors, symptoms, and risk reduction strategies. Additionally, most participants who completed focus groups expressed an interest in improving their health; however they did not have the practical knowledge to do so.[32] Using SCT constructs (knowledge, environment, and self-efficacy), a series of CVD risk reduction classes were designed and implemented to address physical activity, nutrition, and tobacco use. During the intervention period, community activities included monthly aerobics classes, cooking clubs, and smoking-cessation efforts. These activities were well received by community participants evident by consistent attendance. Additionally, these activities continued to receive financial support from the Alabama Department of Public Health and Alabama Cooperative Extension Service when the intervention period was completed.[32]

The Uniontown Project illustrates that community efforts to improve cardiovascular health among low-income populations may be well-received. However, in order to measure how effective a SCT based intervention is, researchers must assess individual health outcomes such as nutritional intake, physical activity, and weight status.

Winett et al. conducted a study among N=1071 church members recruited from 14 churches (67% women, 23% African American) located in southwest Virginia to participate in an internet-based intervention designed to increase fruit and vegetable consumption, dietary fiber intake, and physical activity as measured by steps taken per day.[33] Each church was randomly assigned to receive either a web-based SCT-based intervention which was accessible from a password protected website or control intervention which consisted of handouts only. The SCT-based intervention incorporated self-control, self-efficacy, and outcome expectancy constructs. Also, members enrolled in the SCT-based intervention group received social support in the form of prompts and reminders in church bulletins and pulpit announcements that reinforced program messages.

Post-intervention and follow-up analysis indicated that participants who received the SCT-based intervention exhibited increased fruit and vegetable consumption as well as fiber intake evidenced by food frequency questionnaires.[33] Additionally, participants in the intervention group reported more daily steps taken and were more likely to reach their self-determined physical activity goals in comparison to the control group.[33] Given these outcomes, the improvements seen among the SCT-based intervention indicate that environmental support may have an effect on the success of health interventions. The SCT is a suitable framework for CVD interventions for African American women.[33] Previous research has indicated that constructs within this learning theory are significantly associated with health promoting behaviors among this group.[34-37] In

particular, self-efficacy and observational learning were implicated within several interventions that targeted recipe modification[34] and physical activity.[35]

Current health disparity and chronic disease trends among ethnic minority populations illustrate a need for interventions that address heart disease prevention. In response to these needs, researchers have created interventions that are culturally sensitive in order to meet the needs of at risk populations. When the barriers to healthful eating habits are addressed in a practical, relevant manner, the likelihood to make healthier decisions is also more likely to increase. Given this observation, researchers have designed tailored interventions that incorporate cognitive learning theory constructs to not only increase health and nutrition knowledge, but to help participants to include healthy habits on a daily basis to reduce the likelihood of cardiovascular disease.

CHAPTER II

MANUSCRIPT

Introduction

Cardiovascular disease is the leading cause of death in the United States. In 2006, more than 25% of all deaths in the United States were attributed to heart disease.[38] In 2009, the American Heart Association (AHA) reported that 32.9% and 38.1% of total deaths among African American men and women, respectively, were due to cardiovascular disease; thus ranking cardiovascular disease the number one cause of death among these groups.[38] The projected direct and indirect costs of cardiovascular disease and stroke in the United States is estimated to be $304.6 billion; which is more than double the estimated cost in 2007.[38] This figure is indicative of healthcare costs as well as loss of productivity. Disease prevention programs that target at-risk populations are effective for reducing the yearly costs of preventable chronic diseases by promoting physical activity and improving nutrition.[32]

Cardiovascular disease is highly prevalent among African Americans; however there are few interventions that work consistently to improve cardiovascular health among this population.[33] Among non-Hispanic blacks aged 20 years and older, 44.6% of women and 49.0% of men have some form of cardiovascular disease.[38] In 2005, the

AHA reported that among African Americans, 10.2% have heart disease, 6.2% have coronary heart disease, 31.2% have hypertension and 3.4% have had a stroke. Hypertension among African American women is particularly high in comparison to women of other ethnic groups. In order to explain the increased prevalence of hypertension and other cardiovascular diseases, researchers have investigated the effect of health disparities among diverse populations.

Health disparities describe inconsistencies in health status among populations that differ by race, gender, and socioeconomic status (SES) and include the incidence, prevalence, and disease burden associated with a particular disease.[1] Health disparities arise when environmental factors and lack of quality healthcare result in an increase in prevalence of disease in a particular population compared to other populations.[34] Compared with Caucasians, African Americans suffer disproportionately from higher rates of diet related chronic diseases and shorter life expectancies.[35] Poor health outcomes associated with this population such as shortened life expectancies due to the onset of chronic disease (hypertension, obesity, and diabetes) are seen more often among African Americans in comparison to other ethnic groups. In 2003, the AHA reported that cardiovascular disease is two to four times more prevalent in African Americans than among Caucasians[36], and African Americans had the highest rates of hypertension compared to Caucasians.[37] African American females have the highest body mass index of any ethnicity and gender group with 69% being either overweight or obese.[38] Not only is obesity of concern for low-income African American females, but this population also

has higher rates of diabetes as compared with non-Hispanic whites[39]. Poor dietary choices coupled with a sedentary lifestyle may help to explain the poor overall health and increased risk of chronic disease development seen among this group. It has been well established that African Americans, specifically women, consume excessive amounts of high fat foods, sodium, calories, and cholesterol, and limited fruits, vegetables, and high fiber foods.[40-42] Additionally, when compared with multiple ethnic groups, African American women exhibit lower levels of physical activity when measured using steps taken.[43]

The current health status of the African American female population warrants interventions that are designed to improve cardiovascular health. Research has indicated that child and adolescent dietary behavior is influenced by maternal dietary behavior.[44,24,28,45] Therefore, African American children may be at greater risk for adopting CVD risk factors provided that their caretakers are at risk for CVD. Previously collected data[44] indicated that low-income African American caretakers of young children in Guilford County, NC are at risk for the development of CVD.

Purpose of Study

The purpose of this project was to develop and conduct a tailored nutrition education intervention for African American female caretakers in Guilford County, NC. Overall, this project was designed to investigate the process involved with intervention development.

The objectives of this project were to design and implement a nutrition education intervention to reduce CVD risk factors by promoting the development of healthier eating habits and encouraging physical activity among low-income African American female caretakers. To enhance the practicality of the intervention, focus groups were conducted among the target audience in order to create appropriate lesson plans to increase the long term effects of nutrition education among caretakers and their families.

Methods

Study Design

This project took place in two phases which is illustrated in Figure 1 (phase 1 consisted of a series of focus groups and phase 2 consisted of the intervention). All participants in both phases were female residents of Guilford County, NC, primary caretakers of at least one child ≤ 12 years of age, considered low-income, primary meal preparers, and self-identified as African American.

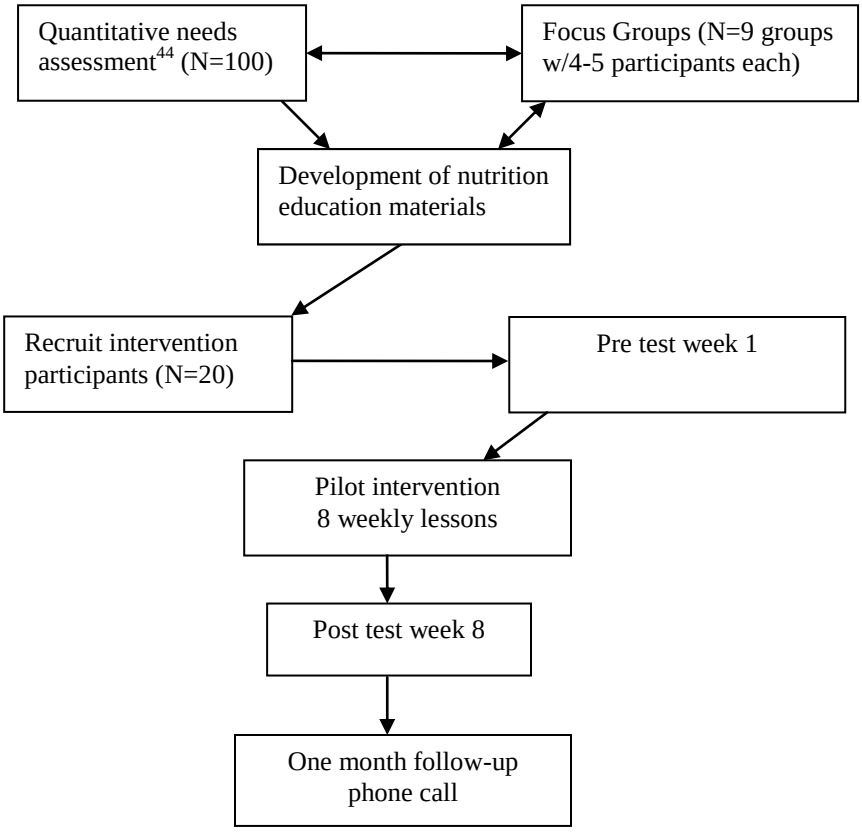

Figure 1. Study Design

Supportive Research Data

Hecht et al. conducted a nutritional needs assessment with low-income, African American caretakers of children ≤ 12 years of age living in Guilford County, NC (N=100). Among this sample, several risk factors for cardiovascular disease were identified; such as high percentages of diabetes, hypertension, overweight/obesity, and insufficient physical activity.[44] Among the sample of participants in the Hecht study, 13% were diagnosed with diabetes, 33% were diagnosed with hypertension, and 76% were classified as overweight or obese according to their calculated BMI. Lack of physical activity was also reported by the participants; 59% considered themselves not active/somewhat active.

Hecht et al. also found a significant association between child's dietary intake and caretaker's total nutrition knowledge (p=0.016). Children were more likely to meet Food Guide Pyramid (FGP) recommendations if their caretaker had good/excellent nutrition knowledge. A significant association between child's adherence to FGP recommendations and respondent's adherence (p=.06) was also indicated. Caretakers who had good/excellent dietary adherence were more likely to take care of children who had good/excellent dietary adherence. This relationship strengthened after controlling for food security, child's age, and the caretaker's education level (p=0.004).

These findings highlight the importance of the development of nutrition education interventions that target African American caretakers not only because they exhibit high rates of CVD risk factors but also because they have a significant influence on the eating habits of their young children.

Phase 1- Focus Groups

Outcomes from Hecht et al. served as the first step in the development of the focus groups for this study. Focus groups were guided by open-ended questions that further investigated health topics that were highlighted by Hecht et al. Mainly, the focus groups were designed to encourage participants to discuss health topics and proactive ideas that would be helpful for the target audience to adhere to guidelines and recommendations provided in the subsequent nutritional intervention. The focus groups were conducted prior to the intervention in an effort to tailor materials and activities that would provide the most benefit to the target audience.

Focus Group Participant Recruitment

Focus group participants were verbally recruited by the author who is an African American woman and an African American, female graduate assistant. This same team also conducted the focus groups. Recruitment took place in the lobbies of community agencies (Guilford County WIC and the Department of Social Services) where participants received and signed an informed consent form prior to participation in the study. All recruitment materials were approved for use by the UNCG Institutional Review Board. After completing a consent form, participants were escorted to an onsite meeting room where they completed a written screening questionnaire to collect contact information, household size and characteristics, and monthly salaries in order determine eligibility for study participation (Appendix G). Eligible individuals were: self identified as African American/Black, the main caretaker of at least one child under the age of 12

years of age, the main meal preparer in their household, and living in a household with monthly income less than $2000. Participants were provided incentives for participation which included: a $20 gift card to Food Lion, refreshments, and free childcare during all sessions. All focus group sessions were conducted within Guilford County government agencies (Department of Social Services and WIC).

Focus Group Structure and Content

The recruitment process produced a total of 9 focus groups with 4-5 participants per group. A total of 40 women participated in the focus groups. Focus group questions (complete list See Appendix A) were designed to assess perceptions of health, benefits of behavior change, barriers and motivators of behavior change, preferred avenues for receiving nutrition education materials, and feedback on nutrition education materials developed specifically for the target audience. Participants were asked about knowledge of healthy foods, eating habits, and barriers that prevented them from eating healthy foods. Each focus group lasted approximately 60-90 minutes, was tape recorded, and transcribed verbatim. Focus group transcription and content analysis were completed by the author and the graduate assistant. Common themes were identified and agreed upon by both the author and the graduate assistant. In order to be designated as a common theme, the topic had to have been discussed at least three different times by three different people at any point during a focus group sessions. Given the small number of total participants it was decided that this number was appropriate as a means for achieving theme saturation.

Content analysis of the themes from the focus group sessions revealed that participants expressed concerns about their eating habits and indicated that time, convenience, and prices of foods they considered to be healthy were barriers to healthful eating habits. Also, among focus group participants; preferred methods of receiving nutrition education materials included classroom teaching and receiving pamphlets that illustrated practical ways to make healthier choices on a daily basis.

Phase II-Intervention Development

Based on the findings from Hecht et al. and results of the focus groups, a nutrition intervention focusing on the reduction of cardiovascular disease risk factors (BMI, saturated fat, fiber, sodium, and fruit and vegetable consumption) was tailored for African American female caretakers of young children. The intervention incorporated eating habits and health concerns that were expressed in the Phase I focus groups. The intervention development was guided by messages from the American Heart Association's Healthy Lifestyle for African Americans and North Carolina's Eat Smart Move More program.

Conceptual Model

A series of eight lesson plans was developed from focus group meetings using constructs from the Social Cognitive Theory (SCT). The SCT describes relationships among self-regulatory behavior and environmental and cognitive factors that support adoption and maintenance of health-promoting behavior.[52] Figure 2 highlights the

relationships between self control, observational learning, expectations, and self-efficacy and how these particular constructs were incorporated into the intervention to promote healthy diet and physical activity habits. For example, if there is an improvement in self-efficacy or confidence associated with a particular healthy behavior, the likelihood of maintaining that behavior should improve as well. Based on the content analysis of the focus groups; the most common barriers to healthful habits included lack of time, money, and convenience associated with healthful habits. Therefore, to address these perceptions, class lessons included interactive learning activities designed to increase self-efficacy, expectations, and confidence level associated with maintenance of healthful behaviors. Several lessons included hands-on learning activities in which participants were able to observe first-hand how to choose and prepare healthful snacks and estimate appropriate serving sizes of various foods using food models and household items.

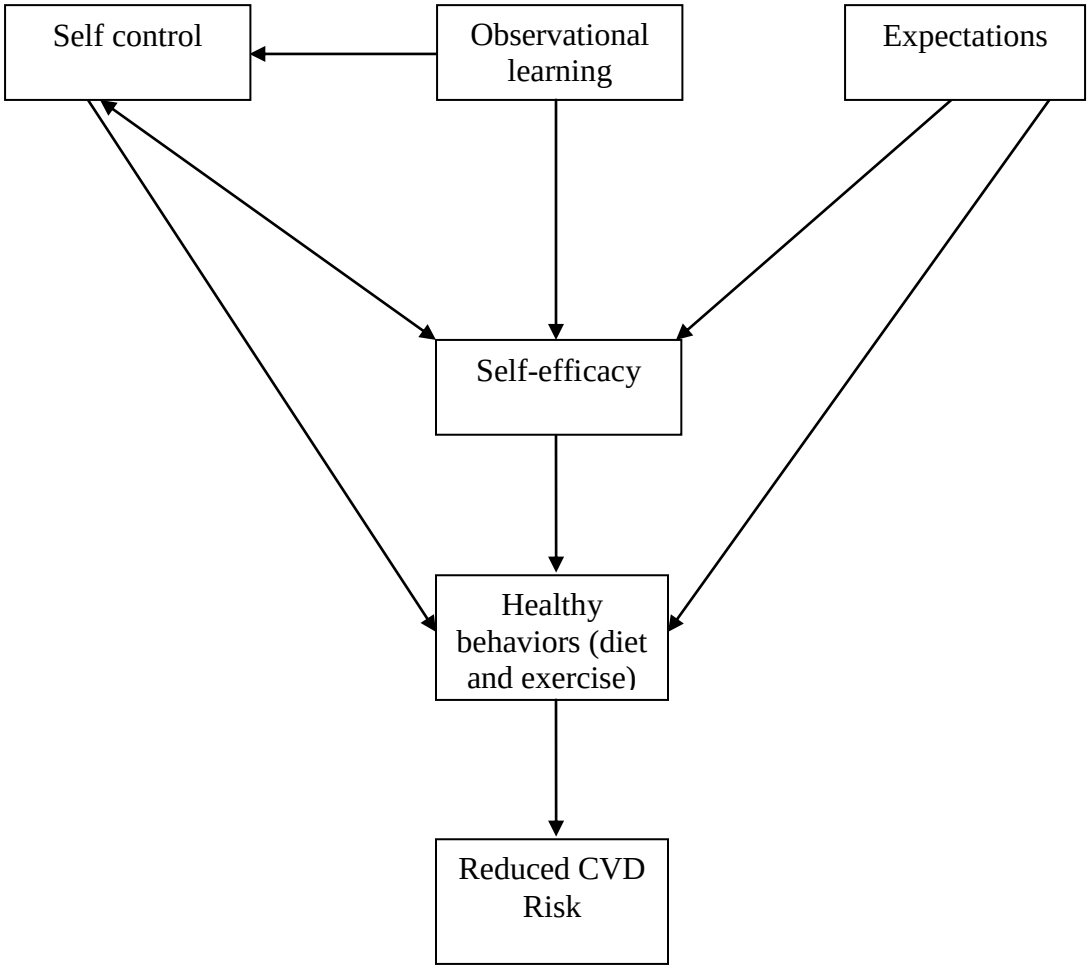

Figure 2. Conceptual Model

The goal of integrating SCT constructs into the learning activities was to increase the likelihood of maintaining healthy behavior and therefore reduce CVD risk.

Intervention Materials Development

Two original handouts tailored to the target audience were created for the intervention (see Appendix E). These handouts provided information about body weight control and CVD prevention which were the two primary health concerns that were expressed during the focus group meetings.

Linking SCT Constructs to Lesson Plans

Focus group themes such as perceived uncertainty associated with purchasing and preparing affordable healthy meals were addressed by the self-efficacy and expectations constructs through learning activities that involved using grocery lists and cost comparisons of preparing meals at home versus eating outside of the home. Table 1 includes examples of participant responses and associated themes, which were translated into lesson plan topics that incorporated SCT constructs and learning activities.

Participants expressed health concerns with regard to high blood pressure and diabetes and were uncertain about how to read nutrition label facts. Self-efficacy addressed this area by practicing how to evaluate nutrition labels in terms of calorie, fat, sodium, and fiber content. Many focus group participants stated that healthful food was inconvenient and time consuming to prepare. Using role modeling behavior and observational learning, participants received a cooking demonstration to illustrate how healthful snacks and meals can be prepared conveniently.

Focus group participants expressed a preference for eating outside of the home at fast food places or restaurants and indicated that they did not know how to determine

appropriate serving sizes for different food groups. The self control construct addressed this issue by presenting MyPyramid in several lessons and highlighting how to estimate serving sizes of various foods using household items.

Increased confidence in selecting and preparing healthy foods should lead to an improvement in participant's eating habits. Participants expressed concerns due to uncertainty about how to prepare more healthful meals at home. Lesson plans and learning activities incorporated positive outcome expectations and observational learning by role modeling how to select healthful food choices and plan meals in a time efficient manner. Other expectations included those concerning how to set and achieve weight loss goals and incorporating more physical activity on a daily basis. All lesson plans and accompanying handouts were content validated (N=5) by three registered dieticians and two nutrition doctoral students to ensure accuracy of information and appropriateness of lesson plan structure. All handouts for weekly lesson plans were face validated (N=5) by members of the target audience. Feedback from content and face validation was used to further refine intervention materials to improve readability and clarity of topics.

Table 1. Development of Lesson Plans and Learning Activities

Participant Responses	Themes	Lesson Topic	SCT Constructs	Learning Activities
"I think [buying healthy food] is expensive these days, when I go looking for something and it costs me five or six dollars, I'll just end up going to the frozen section or the cans which are two for a dollar." "Trying to shop and save on a budget is hard. A lot of times you have to pay more to eat healthy but it has a lifetime of benefits."	Healthy food is expensive to purchase	Meal Planning	Expectations	Interactive game shows how meal planning saves money
"Um, most healthy foods, you have to sit there and prepare, that's a disadvantage so it's not convenient. And also, sometimes the taste; you don't have the satisfying taste of a burger and the vegetables are just not all that quenching for your appetite. That's a disadvantage" "I just wish I could cook for the whole week in one day because most of the time I'm not in the mood [to cook]." "I don't plan [my meals] I just go in the freezer and whatever I feel like cooking is what I cook."	Healthful foods are not convenient to prepare and do not taste good	Healthy Snacks	Observational Learning	Cooking demonstration
"I wanted [my children] to eat healthy I have two little ones that like fruits and vegetables they won't even eat meat" "My kids behave better when I feed them well." "One of my kids is really picky, she doesn't like anything." "I don't want my son to sit and eat chips all day"	Concern about children's eating habits	Cooking/Eating Together	Self-efficacy	Discussion about choosing foods for family
"I was a fast food junkie. Now I can't go out because all I can get [is a] salad because everything else is fat." "Going to restaurants is sometimes hard, because I don't know what to get that is healthy."	Healthy choices are limited when eating meals outside the home	Making Healthy Choices in Restaurants	Self-control	Learning about healthier foods when dining out
"I can't stand gaining weight…after I have my baby, I'm going on a diet" "Diabetes runs in my family so I don't want to get to the point where I am overweight" "I'm concerned about my health, I don't want to be real big because then [I'll] feel bad and look sloppy" "I have an overweight child. I don't know what to do to help him lose weight."	Weight related health concerns	Maintaining a Healthy Weight	Expectations Self control	Calculate and discuss BMI
"If you eat healthy then you will live longer, avoid high blood pressure and diabetes." "[I] didn't know I had blood pressure until a little while ago, I'm on four different types of blood pressure medicines and that's why I have to watch what I have to eat."	Uncertainty about heart disease risk factors	What is Heart Disease?	Situation	Discussion about heart disease prevalence
"Sometimes I'll leave a package of Oreos or cereal bars in the kitchen cabinet and then I'll come back and it's gone… how is eating a NutriGrain bar healthier than eating a line of cookies?" "I want to learn about calories and sodium on nutrition labels." "I had some dried fruit and ended up eating the whole bag." food because I'm at work and [it's] fried foods."	Understanding the Nutrition Fact Label and serving sizes is difficult	MyPyramid/Understanding the Nutrition Fact Label and Eating a Balanced Diet	Self-efficacy Self control	Practiced reading nutrition fact labels, estimating serving sizes

Participant Recruitment for Intervention

Participants were recruited from a church in Guilford County, NC. Participants were recruited directly (face to face interaction) and indirectly (flyers posted on bulletin boards). Participants were selected for the intervention based on whether they met the selection criteria(self identified as low-income, African American, and primary female caretaker of least one child under the age of 12 years) and were included if they chose to participate in the intervention. Flyers and church announcements briefly described the study and the participation process. Additionally, recruitment continued following the first class meeting as two participants were recruited through word of mouth. A total of 23 participants were recruited and signed consent forms. Five women could not participate in the study either because they did not meet eligibility requirements (i.e. not low-income or their child(ren) were over the age of 12 years) or they lacked transportation. Three women who met the eligibility requirements were dropped from the study because they did not attend the classes. Of the remaining 15, data from one participant was eliminated from the analysis due to her absence from seven out of the eight classes. Fourteen participants consistently attended the classes and were included in data analysis for pre and post time periods. During the follow up time period 13 participants were available for the final data collection which was conducted via telephone interviews.

Intervention Implementation

The intervention was conducted at the recruitment site over an eight week period by the same author and graduate assistant who recruited focus group participants. . Intervention participants were recruited from one church which also served as the intervention site. Although the intervention sessions were not tape recorded, the research assistant attended each session and recorded handwritten field notes that served as a record of the intervention sessions and provided additional insight in regards to the "flow" of the meetings.

Intervention Location

All classes were conducted at the church recruitment site. Each lesson was offered twice (Monday and Friday) per week in order to provide flexibility in the schedule. This allowed for participants missing the Monday class to make up the class on Friday of the same week. Classes took place in a large classroom with the exception of the cooking demonstration that was conducted in the church kitchen. Healthy snacks and beverages were offered during each class. Each class lasted for two hours and began with an interactive lesson which lasted for 30 minutes and was followed by a learning activity. Group discussions, games, visual aids, and handouts reinforced the learning objectives that were presented. The large size of the classroom was beneficial for several reasons. The classroom provided sufficient space for all participants to interact during group activities. Additionally, in the classroom, there was space and an assistant available to supervise children who accompanied their mother during the class. The

setup of the tables and chairs in the classroom was consistent throughout the study and the classes were taught in the same room each week.

Pre and Post Test (See Appendix B)

Identical 24-item pre and post tests were developed and consisted of six dietary behavior questions, eight knowledge questions that included MyPyramid daily recommendations for fruit and vegetable consumption and risk factors associated with CVD, six self-efficacy questions that measured perceived confidence in reading nutrition fact labels and estimating serving sizes, and four questions that measured attitudes toward daily exercise and meal planning. Participants completed pre and post tests before and after the intervention, respectively. Pre and post test scores were used to measure changes in nutrition knowledge, behaviors, self-efficacy, and attitudes regarding dietary and physical activity levels to reduce CVD risk factors (see Appendix B for full tool).

Data Collection and Incentives

There were three data collection phases during the intervention (pre and post intervention and 1-month telephone follow up). For each of these time points, participants completed a 24 hour dietary recall interview and body weight and height were measured to calculate BMI. At 1 month follow up, 24 hour dietary recalls, self-reported body weight, and food security data (see Appendix C) were collected over the phone. Participants (N=14) completed identical pre and post tests during the intervention. All participants received a $25 Food Lion gift card for participating in each

of the data collection time points for a total of $75. Participants completed anonymous class evaluations during the post-intervention data collection period and provided feedback concerning the structure and content of the intervention (see Appendix D for full tool). Participants received reusable water bottles, pedometers, and lunch bags, as additional incentives for the duration of the intervention. Free childcare and food were available during each class session for all participants. Table 2 presents the variables and the time points at which they were collected.

Table 2. Intervention Variables

	Time Point		
Variable Name	**Pre-Intervention**	**Post-Intervention**	**1-Month Follow up**
BMI	x	x	x (self reported)
Knowledge Score	x	x	
Attitude Score	x	x	
Behavior Score	x	x	
Self-Efficacy	x	x	
24 Hour Dietary Recall	x	x	x
Food Security/Hunger Core Module			x
Evaluative Feedback		x	

Data Measurements

Body Mass Index

In a separate room, participants were individually measured for BMI. During pre and post intervention time points, the researcher and the graduate assistant measured height using a stadiometer and body weight using a digital scale to calculate BMI (kg/m^2)

Knowledge, Attitude, Behavior and Self-efficacy Scores

Each correct knowledge question (6 questions) received one point (0= minimum, 6= maximum). Responses to the eight behavior questions were scored to reflect a positive change in health behavior. For example, affirmative responses to statements such as "I reduce my use of added fat" or "I take time to plan meals", were given one point (0= minimum, 8= maximum). The self-efficacy score was calculated based on six questions associated with the participant's self-reported confidence level associated with healthy behavior. Each "very confident" response received 3 points, "somewhat confident" received 2 points, and "not confident at all" received 1 point (6=minimum, 18=maximum).

Twenty-four Hour Dietary Recall

Twenty-four hour dietary recalls were obtained from all participants. During the pre and post intervention time points dietary recalls were conducted in person by the researcher and a graduate assistant who were trained in twenty four hour dietary collection. For the 1 month post intervention time point, dietary recall information was

collected over the telephone. All dietary data collection was conducted utilizing the multiple pass approach and participants referred to a portion size handbook to help them illustrate portion sizes of foods they consumed.

Household Food Security

During the 1 month post intervention time point, household food security was determined using the 18 item USDA Food Security/ Hunger Core Module.

Participant Evaluation

After the last class, participants completed anonymous surveys that collected feedback about the intervention structure, content, and implementation. The survey included a five-point Likert scale for questions that pertained to the information presented by the instructor, learning activities, handouts, the teaching style of the instructor, and whether they would recommend the class to other women. The survey allowed participants to list their most and least favorite parts of the class and had a substantial amount of space for participants to provide comments in regards to topics that should be added or removed from the class. Additionally, participants were asked to list what they learned from each of the weekly lessons.

Data Analyses

Pre and post test scores for knowledge, behavior, attitudes, and self-efficacy were compared at each time point. Dietary recall interviews were analyzed using the NDSR database. Nutrients (total fat, saturated fat, cholesterol, sodium, dietary fiber, monounsaturated fat, and polyunsaturated fat) were normalized by each participant's daily energy intake. Pre, post, and follow up data were analyzed using paired t-tests. P-values less than .05 were considered statistically significant. Food security and evaluative feedback were reported as frequency data.

Results

Participant Characteristics

The majority of participants had four or more people living in the household and over 1/3 lived in a house with a monthly income of less than $1500 (Table 3).

Table 3. Participant Household Characteristics

	% (N=14)
Four or more people living in household	57.1
One or more children between 0-5 years of age	42.8
Two or more children between 6-12 years of age	57.1
Monthly income < $1500	35.6

BMI

Mean BMI for pre, post, and follow up time points indicate that all participants were classified as obese (Figure 3). Overall, there was a decrease in mean BMI over the duration of the study. Descriptive data from each time point (Table 4) shows a decrease in the percent of women who were classified as morbidly obese. Also, the frequency of participants in the morbid and super obese categories (Table 4) decreased over time. Significant differences were identified between pre BMI vs. one month post BMI (p=.016) and post BMI vs. one month post BMI (p=.016).

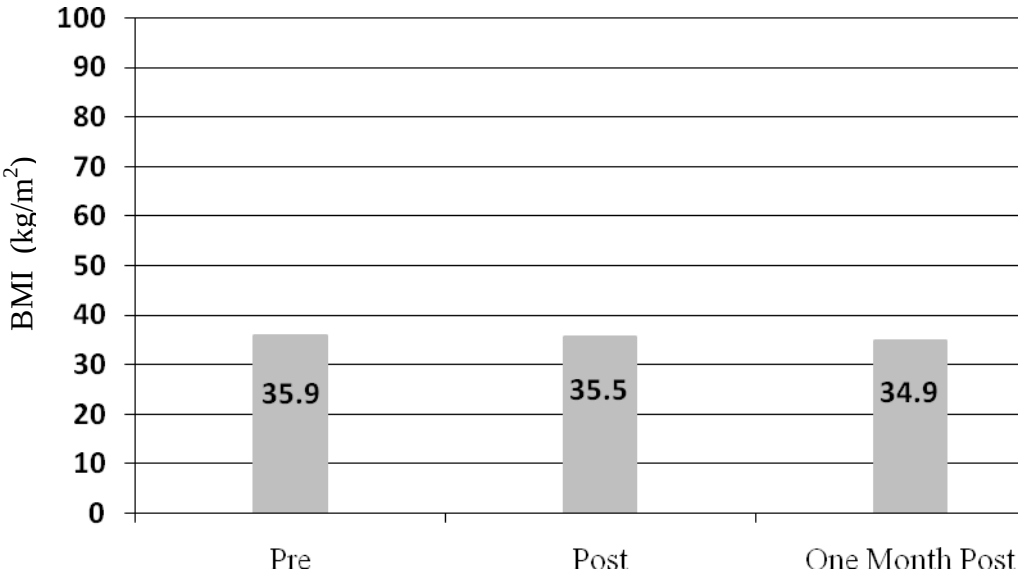

Figure 3. Mean BMI

Table 4. Percentage of Participants in BMI Categories

	Pre (N=14)	Post (N=13)	1- Month Post (N=13)
Overweight (%) (25.0-29.9 kg/m^2)	21.4	21.4	30.8
Class I Obese (%) (30.0-34.9 kg/m^2)	42.9	42.9	38.5
Class II Obese (%) (35.0-39.9 kg/m^2)	7.1	7.1	7.7
Morbid Obese (%) (40.0-49.9 kg/m^2)	21.4	21.4	15.4
Super Obese (%) (>50.0 kg/m^2)	7.1	7.1	7.1

Nutrition Knowledge

Nutrition knowledge was measured during pre and post time points. Knowledge about MyPyramid recommendations for daily fruit and vegetable consumption as well as identifying CVD risk factors were assessed (Table 5).

Table 5. Percentage of Correct Nutrition Knowledge Questions

Question	Pre (%correct)	Post (% correct)
High blood pressure is known as the silent killer	57.1	64.3
I have seen MyPyramid	78.6	100
The daily recommendation of fruit intake is 2 cups/day	64.3	42.9
The daily recommendation of vegetable intake is 2.5 cups/day	7.1	28.6
Heart disease is caused by too much body fat	57.1	78.6
Identify 3 foods that are low in fat	28.5	100

In addition to the percentage of correct answers, a nutrition knowledge score was calculated to represent the total number of correct answers for nutrition knowledge questions (Table 6).

Table 6. Mean Nutrition Knowledge Scores

	Minimum Score	**Maximum Score**	**Mean ± SD (N=14)**
Pre Intervention	1.0	3.0	2.21 ± 0.80
Post Intervention	1.0	4.0	2.35 ± 0.93

Nutrition knowledge scores ranged from 0 to 6 points; zero participants answered all nutrition knowledge questions correctly during pre and post time points. There was no significant difference in nutrition knowledge from pre to post, however the percentage of correct answers to specific nutrition knowledge questions increased with the exception of the recommended daily servings of fruit. When participants were asked to identify the recommended daily servings of fruit, the percentage of correct responses decreased from pre to post time points.

Health Behavior

Statements about health behavior were presented on the pre and post tests (Table 7). For each statement, participants were instructed to select "yes" or "no" in order to

determine how many and what types of healthy behaviors they currently engaged in. Significant pre and post dietary behavior change was seen among participants who reported recent dietary changes and increased meal planning (p=.04). The specific questions that yielded increased "yes" responses are illustrated in Figure 4 and Table 7. Significant improvements were found among questions about making recent changes to the diet as well as increased meal planning (p=.04).

Table 7. Percent Affirmative Answers to Health Behavior Questions

Question	Pre (%yes)	Post (%yes)
I eat lowfat snacks	100	100
I reduce fat from meat	100	100
I reduce my use of added fats	71.4	92.9
I take time to plan meals*	71.4	100
I have changed my eating habits within the last three months*	64.3	92.9
I eat lowfat/fat free dairy products	85.7	92.9

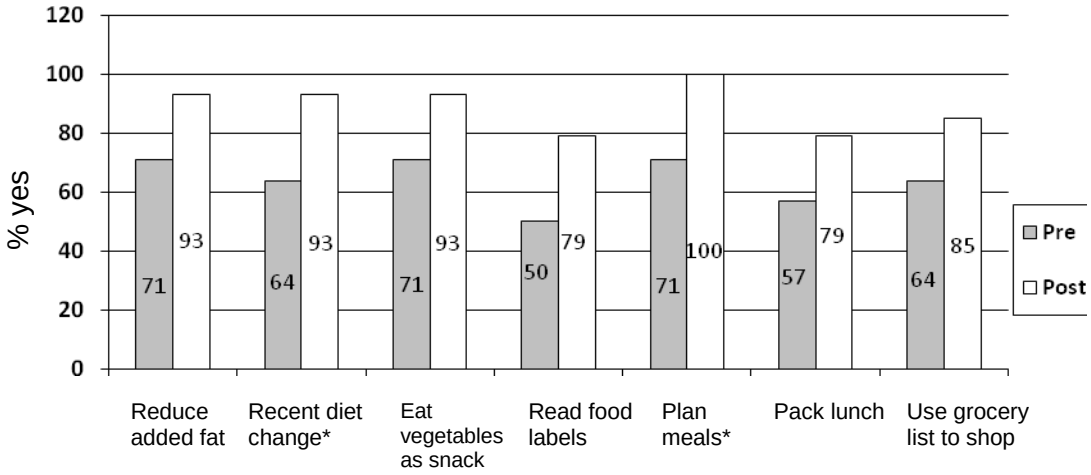

Figure 4. Percentage of Participants Self Reporting Health Behavior Improvements

Table 8. Mean Pre-Post Health Behavior Scores

	Minimum Score	**Maximum Score**	**Mean ± SD (N=14)**
Pre Intervention	0.0	3.0	2.07* ± 0.92
Post Intervention	2.0	6.0	2.85* ± 0.36

Health behavior scores were calculated based on affirmative responses to statements. The health behavior scores ranged from 0 to 6 points. Paired t-test statistics indicate a significant difference between pre and post behavior scores p=.001 (Table 8). Health behavior scores improved at post.

Self-efficacy

Self-efficacy increased between pre and post test time points (Table 9 and Figure 5). There was a significant increase in % very confident statements in response to questions about choosing healthy foods and snacks (p=.04) and preparing healthy foods (p=.008).

Table 9. Percentage of Very Confident Responses to Self-Efficacy Questions

Statement	Pre (% very confident)	Post (% very confident)
Ability to choose healthy food at grocery stores**	57.1	85.7
Ability to prepare healthy foods for myself and family*	42.9	85.7
Ability to choose healthy snacks for myself and family**	64.3	85.7
Ability to estimate serving sizes of foods	14.3	21.4
Ability to understand the Nutrition Fact Label	35.7	42.9

Participants reported increased confidence with choosing healthy foods and snacks, estimating serving sizes, and understanding the Nutrition Fact Label, however, these improvements were not statistically significant.

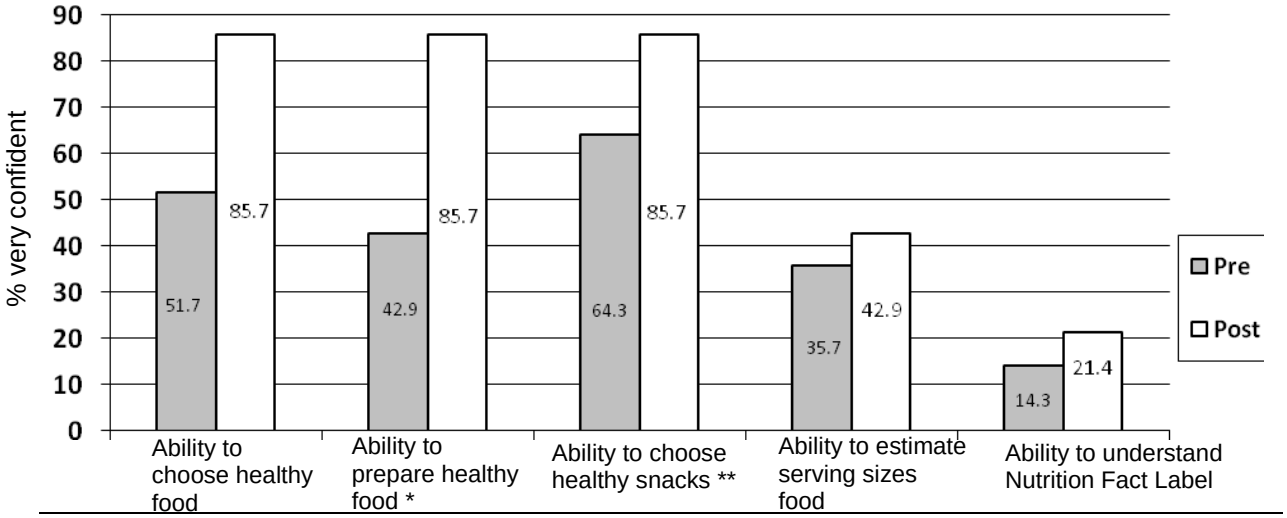

Figure 5. Increased Confidence in Ability to Perform Healthy Behaviors

Self-efficacy scores were calculated to reflect the level of confidence associated with the ability to select, purchase, and prepare healthy meals and snacks, interpret the Nutrition Fact Label, and estimate serving sizes of foods. Self-efficacy scores ranged from 5 to 15 points. Paired t-test results indicate a significant difference between pre and post self-efficacy scores (p=.036) (Table 10).

Table 10. Mean Self-Efficacy Scores

	Minimum Score	**Maximum Score**	**Mean ± SD (N=14)**
Pre Intervention	8.0	15.0	11.86 ± 2.24
Post Intervention	10.0	15.0	13.14 ± 1.23*

Diet and Physical Activity Attitudes

All participants reported identical affirmative (yes) responses to the pre and post test questions designed to evaluate attitudes toward diet and physical activity:

> Would you prepare and eat more foods at home instead of eating at fast food restaurants in order to improve your health?
>
> Would you exercise for at least 30 minutes every day to improve your health?

Thus, no further analysis was conducted on these questions.

24 Hour Dietary Recall

Dietary intake was assessed using 24 hour dietary recall (Table 11). Pre and post recalls were conducted in person and the follow up recall was conducted over the phone using the NDSR database. Nutrients that are positively (sodium, total fat, saturated fat, cholesterol) and negatively associated with heart disease risk (dietary fiber) were compared using paired t-tests.

Table 11. Mean Daily Nutrient Intake

	Daily Energy Intake (kcal)	**Dietary Fiber (g)***	**Sodium (mg)**	**Total Fat (g)***	**Saturated Fat (g)**	**Trans Fat (g)***	**Cholesterol (mg)***
Pre	1947	14.5	3303	37.5	11.4	2.71	310
Post	1611	18.2	2641	36.1	11.1	1.24	168
One Month Post	1628	13.7	4874	40.0	13.4	2.10	331

Total fat significantly increased between pre and one month follow up time points ($p=.033$) and fiber intake increased significantly between pre and post time points ($p=.016$). Trans fat intake significantly decreased between pre and post time points

(p=.015) and increased between post and one month follow up time points (p=.046). Cholesterol intake decreased significantly between pre and post time points (p=.004); however, cholesterol intake increased from post to one month follow up. Differences in sodium and total caloric intake were not significantly different over time.

Household Food Security

Household food security was determined using the 18 item USDA Food Security/ Hunger Core Module. Five participants reported that they did not have enough food to eat in their household; and the kinds of foods that they had in their household were not what they preferred (Table 12).

Table 12. Household Food Security Among Participants

Statement	**Frequency (N=5)**
Eating foods that were not preferred	5
No time to cook	4
Too hard to get to store	1
Worried food would run out	2
Bought food but food did not last	2
Sometimes unable to afford balanced meals	2
Sometimes relied on cheaper foods to feed children	1
Sometimes children were not eating enough	1
Sometimes adults reduced meal size	3

These participants reported that they did not have enough time to shop or cook (N=4) or that it was too hard to get to the store (N=1). Participants sometimes worried that the food in their household would run out before they had money to buy more (N=2) and reported that the food they bought did not last (N=2). Additionally, these participants reported that: they were sometimes unable to afford to eat balanced meals (N=2), relied

on cheaper foods to feed children (N=1), and sometimes their children were not eating enough because they could not afford food (N=1). As a result, adults in their households would sometimes reduce the size of their meals or skip meals (N=3).

Intervention Evaluation

Participants (N=13) evaluated the intervention structure and content by completing anonymous surveys (Table 13). All participants reported that they would recommend the class to other women and indicated that the handouts, teaching style of the instructor, and learning activities were appropriate for the class.

Table 13. Evaluative Feedback

Most Favorite Part of the Intervention	**Frequency (N=13)**
Cooking demonstration	N=8
Discussion	N=8
Games	N= 5
Handouts	N=8
Incentives	N=6
Least Favorite Part of the Intervention	**Frequency (N=13)**
Time commitment	N=2
Children in classroom	N=2
Weight/diet measurements	N=2
Information to Add to Weekly Lessons	**Frequency (N=13)**
Exercise/physical activity	N=5
More cooking demonstrations	N=5

All participants identified at least three of their most favorite parts of the class which included the cooking demonstration "open floor" discussions, games, handouts, and incentives. Eight participants expressed that they felt comfortable discussing food and related household/personal issues in the class. When asked about their least favorite parts

of the class, two participants reported that the two-hour time commitment did not always fit within their schedule, having younger children in the room during the class was sometimes a distraction, and that being weighed and completing the 24 hour dietary recall were uncomfortable. Exercise and fitness related topics were briefly discussed in the classes and five participants indicated that they would prefer more information related to daily exercise as well as more hands-on cooking demonstrations.

Discussion

The purpose of this research was to develop and implement a nutrition education intervention to reduce cardiovascular disease risk factors among low-income African American caretakers in a church setting. The process to complete this study included formative research focus groups which provided justification for lesson plan development and learning materials. Community researchers have concluded that focus groups are a successful way to identify barriers to public health initiatives.[46] Additionally, previous research shows that direct and indirect recruitment strategies among African American women are a beneficial means to attract and maintain interest among research participants.[47] For this study, 23 research participants were recruited and signed consent forms, 14 participants were included in the pre and post test analysis and 13 were included in the one month follow up analysis. In this case, attrition was mainly due to personal schedule conflicts and work schedules. This observation indicates that while participants were willing to participate in the research study, a more effective means of accommodating participants who are willing to give of their time is needed for future

research studies. Overall, community involvement in the research process is valuable for both researchers and the population that is being served.[48]

Previous researchers have recruited project participants through community agencies as well as churches. Wilcox et al. evaluated a faith-based intervention designed to eliminate health disparities among a cohort of churches in South Carolina and concluded that using the church as the recruitment/intervention site was useful for several reasons: the church served as a source of social support for participants and the support from church leaders motivated participants to remain in the program which reduced attrition.[49] Similar to Wilcox et al., Horowitz et al. developed a community based research coalition to address health disparities.[50] The partnership targeted various members of the community including churches. Horowitz et al. concluded that community involvement is an important factor/determinant for the success of an intervention. For the purpose of the current project; the author and the graduate assistant built a networking relationship with church leaders as well as with the church health and wellness ministry. This relationship helped to develop and maintain a level of trust from participants as well as valuable insight concerning how to schedule the intervention.

The structure of the intervention was heavily based on findings from the focus group phase of the current study. Content analysis from the focus groups showed that time, money, and convenience were common barriers to healthy dietary behaviors and were addressed throughout the intervention. These finding are similar to previous interventions that investigated recipe modification[45] and physical activity [9,10] among African American mothers in which time, money and convenience were identified as

barriers to healthy lifestyle. Similar to these studies, the current intervention included several lessons that emphasized meal planning. Participants reported that lessons and learning activities that focused on planning meals and making weekly grocery lists were helpful ways to overcome these barriers, similar to previous related studies.[45] The lesson plans, teaching materials, and incentives were designed/chosen to address the barriers of time, money, and convenience and to decrease attrition. Because the incentives were related to the lesson plans and learning activities, they were used to help participants apply the content of each lesson to their daily lives. For example, incentives included pedometers, water bottles and lunch bags which helped to promote physical activity and the importance of packing a healthy lunch. Among the majority of the participants, the intervention materials and incentives were reported as one of the most liked components of the intervention.

The handouts used in the intervention were colorful, informative, and featured African American women and children. Parra-Medina et al. conducted focus groups with low-income African American caretakers in order to design tailored learning materials for African Americans participating in a study which emphasized CVD awareness and prevention. [14,51] Subsequently, Parra-Medina et al. concluded that ethnically and culturally appropriate education materials were preferred by African American female participants in the WISEWOMAN intervention which emphasized CVD health among this population.[14] A nutrition education and exercise intervention conducted by Cowart et al. indicated that participants were more receptive to health recommendations that were

delivered using handouts and menus that included familiar images and recipes relative to the African American culture.[14]

In order to tailor a nutrition education intervention for a specific audience, researchers must consider learning materials as well as cultural norms within a specific population. Cultural perceptions of healthy behaviors were investigated by Zoellner et al. Specifically, Zoellner et al. evaluated perceptions and potential benefits of MyPyramid recommendations among a small group of low-income African American women.[51] Similar to the current study, more than half of the participants in the Zoellner intervention reported a general desire to be healthier and make better choices concerning diet and exercise. Despite the desire to be healthier, many of the participants were uncertain about how to incorporate MyPyramid recommendations in their daily lifestyle. Therefore, tailoring nutrition education materials is most useful when specific cultural and environmental themes are addressed.

Theory based interventions that include a cultural component have yielded improvements in health behaviors as well as BMI.[52] In this project's sample of low-income obese African American caretakers of young children; there was a decrease in post intervention body weight among intervention participants. In the current intervention, there was a significant improvement in health behaviors especially concerning healthy meal planning and preparation. Williams et al. designed a SCT based diabetes prevention program for African American women and reported recent dietary changes associated with completion of the intervention.[53] Specifically, Williams et al. reported a significant decrease in fried food consumption, use of added fat, and an

increase in fresh fruit and vegetable consumption. Other similar results have been seen among rural, obese African American church members involved in a weight loss intervention which lasted for 8 weeks.[54] In the current study, all participants were classified as obese; however, mean BMI significantly improved in terms of the degree of obesity. During the post and 1 month follow up time points, there were fewer participants classified as class II and class III obese. In contrast to the current study, Kim et al. included a consistent physical activity component to their intervention which was not emphasized in the current intervention. However, since physical activity was mentioned as an area of interest among participants, developing this component may be more useful in a larger intervention.

Nutrition knowledge improved in the current study; but this increase was not associated with improvements in health behavior. Previously conducted research indicated that increased fruit and vegetable intake was associated with a concurrent increase in nutrition knowledge.[55] However, participants in the current study reported that they were more likely to eat more fruits and vegetables if they had the time and confidence to prepare recipes that their families would enjoy. Participants in this study became more familiar with MyPyramid recommendations, received recipes, and observed a cooking demonstration. These interactive methods helped to improve confidence with carrying out healthy behaviors

Throughout the intervention, participants expressed a greater level of confidence associated with various health behaviors. The structure of the class encouraged a level of openness and social support among participants to share challenges and successes they

experienced when providing healthy foods for members of their households. Often, the learning activities involved group work and discussions which kept participants engaged and comfortable with new material. These observations were consistent with previously conducted research showing that determinants of low fat eating behaviors are affected by social support.[56] Creating a supportive environment is necessary to make consistent, healthier choices; however, the motivation to maintain such behavior may be affected by one's attitude.[57] Attitudes about health were measured at pre and post in this study but did not change. Pawlak et al. concluded that attitudes about health behaviors are not clearly associated with daily health behaviors.[58] In the current study, the relationship between attitudes and health behavior was not examined; however, other studies have investigated this relationship. Previously conducted faith-based interventions have shown that if the perception of diet or physical activity is positive, the likelihood of adopting healthy behaviors increases.[58]

Theory based interventions have demonstrated a significant positive relationship between self-efficacy, observational learning, and resultant health promoting behavior.[59-70] Researchers have used theory-based interventions to develop and analyze health promotion interventions among diverse, low-income populations. Anderson et al. investigated the effect SCT constructs on fruit and vegetable consumption among church members in southwestern Virginia who were participants in a health promotion intervention.[71,72] Participants in this study completed The Food Beliefs Survey, food frequency questionnaires, and submitted family food shopping receipts during the course of the study. Anderson et al. analyzed the relationship between self-efficacy, social

support, and self-control constructs have been associated with healthy nutrition patterns and concluded that increased fruit and vegetable intake, increased fiber intake, and decreased total fat were positively associated with these constructs. Given their analyses, Anderson et al. concluded that social supports as well as self-efficacy were strongly associated with improved dietary intake. In the current study, post intervention data showed a significant improvement in self reported confidence with healthy dietary behaviors which is similar to other interventions.[73] Fitzgibbon et al. conducted a weight reduction intervention with African American female caretakers and concluded that observational learning contributed to increased physical activity and improved dietary habits.[74] Furthermore, similar to the current intervention, Fitzgibbons et al. reported that lessons in their intervention were taught by an African American woman who served as a role model that also promoted the development of healthy habits.

In the current study, the relationship between health behavior and class participation was not investigated. However, previous studies indicate a significant relationship between these two variables. Klassen et al. reported a significant, positive relationship between class attendance and health behavior among participants in a fruit and vegetable intervention conducted among low-income African American caretakers.[75] Key findings indicated that increased class attendance resulted in a greater degree of social support as well as improved health behavior. In the current study, participants who consistently attended the classes expressed an appreciation for the comfortable, social atmosphere of the class. This may suggest an association between social support and resultant participation in the intervention. This social characteristic was consistently

present throughout the intervention and was identified in the majority of the anonymous evaluation surveys as a benefit to attending the sessions. Overall, participants reported an appreciation for the informal setting during the sessions and maintained a consistent, positive attitude regarding gaining knowledge and new skills.

The main purpose of this project was to design an intervention to decrease CVD risk factors for African American caretakers. Given the significant observations and results seen during the development, implementation, and evaluation phases of this pilot study; a larger-scaled intervention could yield long-lasting, improved cardiovascular health among African American caretakers of young children.

Limitations

There were several limitations of this study. Dietary information was collected at three different time points using different methods. In particular, for the pre and post data collection, the researcher and an assistant conducted face to face interviews with participants. During these interviews, participants completed the multiple pass dietary recall and estimated their portion sizes with the aid of a food amounts booklet. During the follow up time period, the researcher and an assistant conducted dietary recalls over the phone using the NDSR dietary analysis computer program. While this was still a multiple pass dietary recall using the food amounts booklet, the interview was guided using specific prompts in order to gain more details about the participant's dietary intake. The computer prompts were more specific than the in-person prompts and yielded more detail about foods eaten over a 24 hour period. These prompts presented limitations

especially concerning foods that were eaten in restaurants that were not available in the NDSR database as well as foods that were home cooked without a specific recipe.

The purpose of the 24 hour recall was to collect data that reflected typical dietary intake. During the pre-intervention data collection time point, many of the church members in the intervention were participating in a corporate fast within the church. This particular fast was similar to the Daniel Fast which restricts meat, bread, and processed sweets and promotes fruit and vegetable intake. Therefore, participants on this fast had higher initial intake of fruits and vegetables and lower levels of meat, fiber, and processed foods which may not provide an accurate 'snapshot' of dietary intake. Participants self reported their dietary intake which indicates the possibility of under/over reporting portion sizes and eliminating or adding foods that were or were not eaten over a 24 hour period. In order to correct for underreporting, nutrient intake was expressed per daily calorie intake. Given the atypical dietary intake data that was collected during the pre-intervention time point, a significant increase in total fat ($p=.033$) and saturated fat ($p=.049$) was seen among pre and follow up time points when levels of these nutrients were expressed in terms of daily caloric intake. Additionally, there was a significant increase in dietary fiber intake ($p=.024$) between pre and post intervention time points.

In addition to the limitations seen with the dietary data collection and interpretations, participants were asked to self report their body weight during the one month follow up time point. Many participants did not report drastic changes to their body weight; however, self-reporting presents a source of error or misreporting.

Overall, the material presented during the intervention was well received. However, challenges with participant attrition were seen during this study. Although the meetings were conducted twice per week, the time during which the intervention was implemented presented several scheduling problems. The intervention began during the month of November which coincided with the Thanksgiving and Christmas holidays. This led the researcher to reschedule two classes in order to best meet the scheduling needs of the participants. This rescheduling did not immediately cause participants to drop out of the study, but this change prolonged the length of the study beyond the original 8 weeks. Because of the additional time commitment, several participants (who were eligible), were unable to meet consistently on a weekly basis due to other pre-existing responsibilities (i.e. work, household tasks, etc.). In order to address the time constraints experienced by the participants, the researchers scheduled individualized, "make up" sessions during which participants could receive handouts and information they missed during the week.

CHAPTER III

EPILOGUE

The purpose of this pilot study was to develop a nutrition education intervention for low-income African American female caretakers in order to reduce CVD risk factors. Throughout the development, implementation, and evaluation of this intervention I have realized the importance of tailoring educational processes in order to meet the needs and preferences expressed by members within this group. Moreover, this project was a learning experience that challenged me to creatively translate nutrition knowledge into practical guidelines that are applicable to address health among this group.

In the early phase of this project, I experienced various challenges especially during the recruitment process for the focus group meetings. This encouraged me to think of more interactive ways to engage more participants in order to move forward with the project. Initially, I was unsure of how many participants my research assistant and I would be able to recruit each time we visited WIC or the Guilford County Department of Social Services. In order to recruit these participants, I had to think of creative ways to attract the attention of potential participants beyond relying on posted flyers and general announcements. I saw the need to recruit participants on a face-to-face basis. Although it was a step out of my personal comfort zone, I chose to recruit people by talking with them in lobbies or in waiting areas in lieu of relying on print materials posted on bulletin

boards. By taking the initiative to introduce myself to potential participants first, I was able to establish an immediate sense of rapport with them. This was an important part of the recruitment process because this helped participants to be at ease when sharing personal issues such as dietary habits and the associated financial hardships they encounter on a daily basis. Fortunately, the majority of the focus group and intervention participants was highly responsive to discussions and provided valuable feedback and concerns which not only helped me to create the pilot intervention, but will facilitate the development of a larger intervention for this population.

Leading the intervention was truly a worthwhile experience and was a valuable example of what nutrition educators experience on a daily basis. Applied researchers must invest a significant amount of time and effort into the programs that they implement. I experienced this firsthand from the planning stage to the implementation stage and learned how to balance the setbacks that occur when working with people who were extremely busy, yet gracious and understanding enough to grant me two hours of their week. In all, this aspect of the study encouraged me to not only plan ahead, but to also remain practical to address unexpected conflicts that arise. Throughout the intervention, I was pleased with the supportive, social atmosphere that developed among all of the participants. It was refreshing to see the participants take an interest in learning the material that was presented and to help them apply this knowledge to their daily lives. Overall, this experience confirmed my interest to establish health promotion initiatives within at-risk communities.

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APPENDIX A- FOCUS GROUP QUESTIONS

Focus Group Questions

1. How would you describe a healthy diet?
2. Tell me about what influences your eating habits.
3. What kinds of foods do you consider as healthful?
4. Tell me about the availability of healthful foods in stores and grocery stores that you buy food from?
5. Describe some foods that you consider to be healthy.
6. How do you prepare healthful food?
7. What are some disadvantages and advantages to eating healthful foods?
8. Is it difficult to eat healthful foods? Tell me about what causes these difficulties?
9. Is there anything that you would change about your eating habits?
10. What is the best way to promote/motivate people to eat healthful foods?

APPENDIX B- PRE/POST TEST

Pre and Post Test Questions

Directions: Read each question and select the answer that best describes your usual eating habits.

1. **I eat low fat or fat free products for snacks, sweets, or desserts:** Yes No

   I eat *(check all that apply):*

   ___Pretzels ___Low fat crackers

   ___Air popped popcorn ___Vegetables

   ___Fruits ___Modified baked goods

   List other foods that you eat that are low fat or fat free:

   _____

   _____

   _____

2. **I reduce the fat from meats:** Yes No

   I reduce the fat from meats by *(check all that apply):*

   ____Eating smaller portions ____Removing skin from meat

   ____Eating leaner cuts of meat ____Eating meat substitutes/meatless meals

   ____Trimming visible fat off of meat

   List other ways that you reduce fat from meats:

   _____

   _____

   _____

3. **I reduce my use of added fats:** Yes No

   I reduce my use of *(check all that apply):*

   ____Mayonnaise ____Salad dressing

   ____Peanut butter ____Margarine or butter

   ____Gravy ____Sauces

   List other ways that you reduce use of added fats:

   _____

   _____

4. **I take time to plan meals**: Yes No

I take time to plan meals by *(check all that apply):*

___Using a grocery list when I shop ___Planning weekly meals ahead of time

___Packing my lunch

List other ways that you plan meals:

_____

_____

_____

5. **I have recently (within the last 1-3 months) changed my eating habits to be healthier:**

Yes No

I have changed my eating habits by *(check all that apply):*

___Modifying recipes ___Making low fat choices readily available at home

___Ordering low fat food in restaurants ___Refusing to eat high fat foods

___Reading labels

List other ways that you have changed your eating habits to be healthier:

_____

_____

_____

6. **I eat low fat or fat free dairy products**: Yes No

I eat or drink *(check all that apply):*

___1% or skim milk ___Low fat/fat free cheese

___Low fat/fat free yogurt ___Low fat/fat free dairy desserts

___Low fat/fat free frozen yogurt

List other low fat/fat free dairy products that you eat:

_____

_____

_____

Directions: Read each question and circle the best answer

7. Which of the following is a risk for heart disease that a person can control?

01) Age

02) Gender

03) Body fat

04) I don't know

8. What disease is known as the 'silent killer'?

01) Heart attack

02) Obesity

03) High blood pressure

04) I don't know

9. Have you ever seen MyPyramid?

01) Yes

02) No

10. How many cups of fruit should you eat per day?

01) 1 cup

02) 2 cups

03) 2 ½ cups

04) ½ cup

05) I don't know

11. How many cups of vegetables should you eat per day?

01) 1 cup

02) 2 cups

03) 2 ½ cups

04) 3 cups

05) I don't know

12. List two diseases that can be caused by having too much body fat:

01) _____

02) _____

03) I don't know

13. **List three foods that you eat that you consider to be low in fat (Give brand names if you know them):**

01) _____

02) _____

03) _____

04) I don't eat low fat foods

14. **List three foods that you eat that you consider to be high in fat (give brand names if you know them):**

01) _____

02) _____

03) _____

04) I don't eat high fat foods

Directions: **Use the following scale to choose the response that best describes your reaction to each statement:**

01) "Very confident"- I know exactly how to do this
02) "Somewhat confident"- I am unsure about how to do this all of the time
03) "Not confident at all"- I don't know how to do this

15. I am _____ in my ability to choose healthy foods at the grocery store

01) Very confident

02) Somewhat confident

03) Not confident at all

16. I am _____ in my ability to prepare healthy foods for myself and my family

01) Very confident

02) Somewhat confident

03) Not confident at all

17. I am _____ in my ability to select healthy snacks for myself and my family

01) Very confident

02) Somewhat confident

03) Not confident at all

18. I am _____ in my ability to understand the nutrition fact labels on foods

01) Very confident

02) Somewhat confident

03) Not confident at all

19. I am _____ in my ability to estimate serving sizes of foods

01) Very confident

02) Somewhat confident

03) Not confident at all

20. Would you exercise for at least 30 minutes every day in order to improve your health?

01) Yes, I would 02) No, I would not

21. Would you change how you prepare your favorite recipe to make it more healthful?

01) Yes, I would 02) No, I would not

22. Would you prepare and eat more foods at home instead of eating at fast food restaurants in order to improve your health?

01) Yes, I would 02) No, I would not

23. Would you lose weight in order to improve your health?

01) Yes, I would 02) No, I would not

24. Would you spend the time necessary to plan out your meals every week?

01) Yes, I would 02) No, I would not

APPENDIX C- USDA FOOD SECURITY HUNGER MODULE

FOOD-SECURITY/HUNGER CORE MODULE:
3-STAGE DESIGN, WITH SCREENERS
USDA, Food and Nutrition Service and Economic Research Service – 6/23/99

Transition into Module (administered to all households): These next questions are about the food eaten in your household in the last 12 months, since (current month) of last year and whether you were able to afford the food you need.

USDA Food Sufficiency Question/Screener: Questions 1, 1a, 1b (Optional, these questions are not used to calculate the food-security/hunger scale. Question 1 may be used in conjunction with income as a preliminary screener to reduce respondent burden for high income households).

1. [IF ONE PERSON IN HOUSEHOLD, USE "I" IN PARENTHETICALS, OTHERWISE, USE "WE."]

   Which of these statements best describes the food eaten in your household in the last 12 months: --enough of the kinds of food (I/we) want to eat; --enough, but not always the kinds of food (I/we) want; --sometimes not enough to eat; or, --often not enough to eat?

   [1] Enough of the kinds of food we want to eat (SKIP 1a and 1b)
   [2] Enough but not always the kinds of food we want (SKIP 1a)
   [3] Sometimes not enough to eat [SKIP 1b]
   [4] Often not enough [SKIP 1b]
   [ ] DK or Refused (SKIP 1a and 1b)

1a. [IF OPTION 3 OR 4 SELECTED, ASK] Here are some reasons why people don't always have enough to eat. For each one, please tell me if that is a reason why YOU don't always have enough to eat. [READ LIST. MARK ALL THAT APPLY.]

YES	NO	DK	
[ ]	[ ]	[ ]	Not enough money for food
[ ]	[ ]	[ ]	Not enough time for shopping or cooking
[ ]	[ ]	[ ]	Too hard to get to the store
[ ]	[ ]	[ ]	On a diet
[ ]	[ ]	[ ]	No working stove available
[ ]	[ ]	[ ]	Not able to cook or eat because of health problems

1b. [IF OPTION 2 SELECTED, ASK] Here are some reasons why people don't always have the quality or variety of food they want. For each one, please tell me if that is a reason why YOU don't always have the kinds of food you want to eat. [READ LIST. MARK ALL THAT APPLY.]

YES	NO	DK	
[ ]	[ ]	[ ]	Not enough money for food
[ ]	[ ]	[ ]	Kinds of food (I/we) want not available
[ ]	[ ]	[ ]	Not enough time for shopping or cooking
[ ]	[ ]	[ ]	Too hard to get to the store
[ ]	[ ]	[ ]	On a special diet

Stage 1: Questions 2-6 (asked of all households; begin scale items).

[IF SINGLE ADULT IN HOUSEHOLD, USE "I," "MY," AND "YOU" IN PARENTHETICALS; OTHERWISE, USE "WE," "OUR," AND "YOUR HOUSEHOLD."]

2. Now I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 12 months, that is, since last (name of current month).

   The first statement is "(I/We) worried whether (my/our) food would run out before (I/we) got money to buy more." Was that often true, sometimes true, or never true for (you/your household) in the last 12 months?

   [ ] Often true
   [ ] Sometimes true
   [ ] Never true
   [ ] DK or Refused

3. "The food that (I/we) bought just didn't last, and (I/we) didn't have money to get more." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

   [ ] Often true
   [ ] Sometimes true
   [ ] Never true
   [ ] DK or Refused

4. "(I/we) couldn't afford to eat balanced meals." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

   [ ] Often true
   [ ] Sometimes true
   [ ] Never true
   [ ] DK or Refused

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q5 - 6; OTHERWISE SKIP TO 1st-Level Screen.]

5. "(I/we) relied on only a few kinds of low-cost food to feed (my/our) child/the children) because (I was/we were) running out of money to buy food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

   [ ] Often true
   [ ] Sometimes true
   [ ] Never true
   [ ] DK or Refused

6. "(I/We) couldn't feed (my/our) child/the children) a balanced meal, because (I/we)

couldn't afford that." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

1st-level Screen (screener for Stage 2): If affirmative response to any one of Questions 2-6 (i.e., "often true" or "sometimes true"), OR, response [3] or [4] to Question 1 (if administered), then continue to Stage 2; otherwise, skip to end.

Stage 2: Questions 7-11 (asked of hh's passing the 1st-level Screen: estimated 40% of hh's ≤ 185% Poverty; 5.5% of hh's > 185% Poverty; 19% of all households).

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK Q7; OTHERWISE SKIP TO Q8]

7. "(My/Our child was/The children were) not eating enough because (I/we) just couldn't afford enough food." Was that often, sometimes, or never true for (you/your household) in the last 12 months?

[ ] Often true
[ ] Sometimes true
[ ] Never true
[ ] DK or Refused

8. In the last 12 months, since last (name of current month), did (you/you or other adults in your household) ever cut the size of your meals or skip meals because there wasn't enough money for food?

[ ] Yes
[ ] No (Skip 8a)
[ ] DK (Skip 8a)

8a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

[ ] Almost every month
[ ] Some months but not every month
[ ] Only 1 or 2 months
[ ] DK

9. In the last 12 months, did you ever eat less than you felt you should because there wasn't enough money to buy food?

[ ] Yes
[ ] No
[ ] DK

10. In the last 12 months, were you every hungry but didn't eat because you couldn't afford enough food?

[ ] Yes
[ ] No
[ ] DK

11. In the last 12 months, did you lose weight because you didn't have enough money for food?

[ ] Yes
[ ] No
[ ] DK

2nd-level Screen (screener for Stage 3): If affirmative response to any one of Questions 7 through 11, then continue to Stage 3; otherwise, skip to end.

Stage 3: Questions 12-16 (asked of hh's passing the 2nd-level Screen: estimated 7-8% of hh's < 185% Poverty; 1-1.5% of hh's > 185% Poverty; 3-4% of all hh's).

12. In the last 12 months, did (you/you or other adults in your household) ever not eat for a whole day because there wasn't enough money for food?

[ ] Yes
[ ] No (Skip 12a)
[ ] DK (Skip 12a)

12a. [IF YES ABOVE, ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

[ ] Almost every month
[ ] Some months but not every month
[ ] Only 1 or 2 months
[ ] DK

[IF CHILDREN UNDER 18 IN HOUSEHOLD, ASK 13-16; OTHERWISE SKIP TO END.]

13. The next questions are about children living in the household who are under 18 years old. In the last 12 months, since (current month) of last year, did you ever cut the size of (your child's/any of the children's) meals because there wasn't enough money for food?

[ ] Yes
[ ] No
[ ] DK

14. In the last 12 months, did (CHILD'S NAME/any of the children) ever skip meals because there wasn't enough money for food?

[ ] Yes

[ ] No (Skip 14a)
[ ] DK (Skip 14a)

14a. [IF YES ABOVE ASK] How often did this happen---almost every month, some months but not every month, or in only 1 or 2 months?

[ ] Almost every month
[ ] Some months but not every month
[ ] Only 1 or 2 months
[ ] DK

15. In the last 12 months, (was your child/ were the children) ever hungry but you just couldn't afford more food?

[ ] Yes
[ ] No
[ ] DK

16. In the last 12 months, did (your child/any of the children) ever not eat for a whole day because there wasn't enough money for food?

[ ] Yes
[ ] No
[ ] DK

END OF FOOD-SECURITY/HUNGER CORE MODULE

APPENDIX D—INTERVENTION EVALUATION

Preventing Heart Disease Among African American Women
Evaluation Form

INSTRUCTIONS: Please circle your responses to the statements provided below and provide any comments where needed.

1. I would recommend this class to other women.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Comments:_____

_____

2. Overall, I learned new information about nutrition and heart health in the classes.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Comments:_____

_____

3. Overall, the handouts were eye-catching, provided useful information, and were easy to read.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Comments:_____

_____

4. The teaching style of the instructor was appropriate for the class.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Comments:_____

_____

5. The learning activities were appropriate for the class.

Strongly Agree Agree Neutral Disagree Strongly Disagree

Comments:_____

_____

INSTRUCTIONS: Please evaluate the overall quality and content of the classes.

6. Please list 3 of your most favorite parts of the class:

   01)_____

   02)_____

   03)_____

7. Please list 3 of your least favorite parts of the class:

   01)_____

   02)_____

   03)_____

8. Please list any topics or learning activities that should be added to the classes:

   _____

   _____

   _____

9. Please list topics or learning activities that should be removed from the classes:

   _____

   _____

   _____

10. Did you ever miss a class?

    Yes No

    If yes, why? (time conflict, home/family responsibilities, had to work, not interested in topic, etc.)?

    _____

    _____

    _____

Please list 2 things that you learned from each class:

Week 1: What is cardiovascular disease (CVD)

01)_____

02)_____

Week 2: Maintaining a healthy weight

01)_____

02)_____

Week 3: "My Pyramid" and reading food labels

01)_____

02)_____

Week 4: Smart shopping and balanced eating

01)_____

02)_____

Week 5: Healthy snacks; cooking demonstration

01)_____

02)_____

Week 6: Meal planning

01)_____

02)_____

Week 7: Eating as a family

01)_____

02)_____

Week 8: Making small changes, eating healthy in restaurants

01)_____

02)_____

APPENDIX E- HANDOUTS

Resources

1. World Health Organization Fact Sheet. *Cardiovascular Diseases.* Available at: http://www.who.int/mediacentre/factsheets/fs317/en/index.html. Accessed on: June 23, 2008.

2. United States Department of Health and Human Services. Office of Minority Health. *Heart Disease and African Americans.* Available at: http://www.omhrc.gov. Accessed on: June 23, 2008.

3. USDA. Dietary Guidelines for Americans 2005. Available at: http://www.healthierus.gov/dietaryguidelines. Accessed on: June 23, 2008.

4. American Heart Association. Heart Disease and Stroke Statistics-2007 Update. Cirulation. 2007;e69-e171.

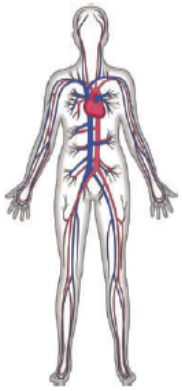
UNCG Department of Nutrition

P.O Box 26170
Greensboro, NC 27402-6170

Phone: 336-256-1382
Email: kpingram@uncg.edu

Prevent Heart Disease

Know the Facts
Reduce Your Risk



Heart Health for African American Women

University of North Carolina Greensboro
Department of Nutrition

KNOW THE FACTS

Cardiovascular disease (CVD) is the number one cause of death world-wide and includes[1]:

- Heart disease and heart attack
- High blood pressure
- Stroke
- High cholesterol

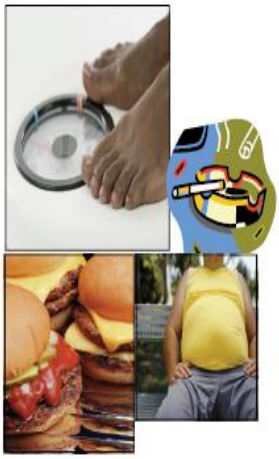
CVD AND AFRICAN AMERICANS

- In 2007, 1 in 3 Americans had one or more types of CVD[4]
- African American women are more likely to die from heart disease, stroke, and high blood pressure[4].

You Can Prevent CVD

Heart disease, high blood pressure, and high cholesterol are usually caused by:

- Being overweight
- Eating a diet that is high in fat and salt
- Not exercising
- Smoking



REDUCE YOUR RISK

You can improve your health by eating healthful foods and exercising during the week

1. Limit your intake of fats.
2. Eat at least 2 cups of fruit and 2 1/2 cups of vegetables per day.

3. Choose and prepare foods that are low in salt, fat, and sugar.

4. Exercise at least 30 minutes most days of the week.
5. Maintain a body weight that is healthy for your body type.

Resources

1. United States Department of Health and Human Services. Centers for Disease Control and Prevention. *About BMI For Adults.* Available at: http://www.cdc.gov/nccdphp/dnpa/BMI/adult_BMI/about_adult_BMI.htm#Definition. Accessed on: June 24, 2008.
2. United States Department of Health and Human Services. Office of Minority Health. *Obesity and African Americans.* Available at: http://www.omhrc.gov. Accessed on: June 23, 2008.
3. American Obesity Association. Obesity in Minority Populations Fact Sheet. Available at: http://obesity1.tempdomainname.com/subs/fastfacts/Obesity_Minority_Pop.shtml. Accessed on: June 23, 2008.
4. Weight Control Information Network. Weight Loss and Nutrition Myths. Available at: http://win.niddk.nih.gov/publications/myths.htm. Accessed on: June 23, 2008.
5. Danger Signs of a Fad Diet. Available at: http://www.eatsmartmovemorenc.com. Accessed on: June 23, 2008.

P.O Box 26170
Greensboro, NC 27402-6170

Phone: 336-256-1382
Email: kpingram@uncg.edu

Maintaining a Healthy Weight

Know the Facts

Reduce Your Risk

Promoting Heart Health for African American Women

University of North Carolina Greensboro
Department of Nutrition

Know the Facts

Having too much body fat is not good for your health and might put you at risk for:

- Type 2 diabetes
- Heart disease

BMI is used to find out if someone is overweight[1,3]

$$BMI = \frac{\text{Body weight (lbs)}}{\text{Height (in)}^2} \times 703$$

What Does My BMI Mean?

Less than 18.5	Underweight
18.5-24.9	Normal weight
24.9-29.9	Overweight
>30	Obese

Obesity and African Americans

- **78%** of African American women are overweight, and **58%** are obese[3].

Eating more fruits and vegetables and exercising each day will help you have a healthier weight.

Reduce Your Risk

1. Improve your health by eating foods that are low in fat, salt, and sugar

2. Avoid overeating during meals by being aware of serving sizes

3. Try to get at least 30 minutes of exercise most days of the week

APPENDIX F—INTERVENTION LESSON PLANS

NUTRITION EDUCATION INTERVENTION TO DECREASE CARDIOVASCULAR DISEASE RISK AMONG AFRICAN AMERICAN WOMEN

PHASE I- FOCUS GROUP MEETINGS CONDUCTED WITH 40 AFRICAN AMERICAN WOMEN
PHASE II- NUTRITION INTERVENTION DESIGNED FOR 20-25 AFRICAN AMERICAN WOMEN

WEEK 1. What is Cardiovascular Disease?

Justification: Phase 1 participants expressed health concerns (diabetes, high blood pressure) and how to cope with these diseases through diet. Participants expressed that they are affected by diabetes, overweight/obesity, and high blood pressure.

1**. Target audience for all lesson plans**: Low-income, African American women with at least one child < 12 yrs. of age

2. **Objective**: To identify and discuss:
a. Cardiovascular disease/risk factors
b. Specific diseases (hypertension, obesity, and diabetes)
c. Prevention strategies to incorporate into their daily lifestyle.

3. **Time** allowed: 2 hrs

4. **Preassessment**: Ask audience:
a. What is CVD; how does it affect African Americans?
b. To describe how diet influences CVD onset.
c. How specific diseases have affected their family

5. **Content and sequence**:

a. Define CVD

i. Statistics of at risk populations (Search Your Heart, American Heart Association, 2006)

--46% of African American women between 20-74 years of age have high cholesterol

--77% of African American women are overweight or obese

--20% of all deaths among African Americans are due to high blood pressure

b. CVD is preventable; illustrate how changing diet and increasing physical activity will reduce CVD risk factors.

6. **Learning activities**:

a. Group discussion of USDA guidelines for adults (30-60 minutes exercise most days of the week) in order to show how making small steps will lead to health improvement.

b. Participants will describe daily physical activities that will contribute to the 30-60 min exercise recommendation

c. Participants will learn how to estimate serving sizes (using hands, palms, deck of cards, dice, etc.)

7. **Materials**:

--Flip chart or blackboard

--Handouts

--"What Counts as a Serving" (Eat Smart, Move More)

--"Prevent Heart Disease Brochure"

--"The Heart Truth" Wallet Card (NHLBI)

--"Sisters Together; Move More, Eat Better" (NIDDK)

--Estimating portion sizes

-- audio cassette, cupcake wrapper, CD, baseball, lightbulb, tennis ball, cotton balls (7), Styrofoam cup (8oz), large egg, dice (4), battery (9-volt), deck of cards, ping pong ball,

8. **Evaluation**:

a. Participants will identify 3 lifestyle risks and 3 ways to counteract CVD onset (diet modification and physical activity)

b. Participants will identify 3 ways to estimate the appropriate serving sizes of foods

WEEK 2. What is a Healthy Weight?

Justification: Phase I participants expressed concerns about being overweight, weight loss strategies, and fad diets.

2. **Objective**: Participants will describe strategies to healthfully control their weight.

3. **Time allotted**: 2 hrs.

4. **Preassessment**: Ask participants:

a. How is healthy weight determined?

b. To identify what it means to be at a healthy weight

c. If they think they are at a healthy weight.

5. **Content and sequence**:

a. Define healthy weight

b. Define BMI and explain its purpose; describe obesity and overweight in terms of BMI

c. Describe strengths and weaknesses of BMI

d. Strategies used to maintain a healthy weight through diet and exercise

6. **Learning Activities**:

a. Calculate BMI, describe risks for high BMI, identify how to decrease BMI

b. Group discussion to identify ways to incorporate at least 30 minutes of physical activity into daily schedules

c. Participants will set goals for physical activity and record their goals on a weekly activity log and will record their status for one week.

7. **Materials**:

--Flip-pad or blackboard for writing notes

--Calculators

--Scales, yardstick

--Tape measure

--Handouts

--BMI Table

--Maintaing a Healthy Weight Brochure

--"Choosing to Move More Throughout the Day" (Eat Smart, Move More)

--"Enjoy a Healthy Lifestyle" (Meals Matter)

--"Physical Activity Journal" (Meals Matter)

--"Making Smart Drink Choices" (Eat Smart, Move More)

--"Moving More, Everyday, Everywhere" (Eat Smart, Move More"

8. **Evaluation**:

a. Participants will identify 3 health risks associated with high BMI

b. Participants will identify 3 ways to achieve at least 30 minutes of physical activity per day.

WEEK 3. MyPyramid/Reading Labels

Justification: Participants in phase I expressed that they do not understand nutrition labels, what makes foods better than others, also considering the fat percentages in meats.

2. **Objective**:

a. To interpret food labels concerning percentages of nutrients (fat, sodium, dietary fiber) for 5 foods or snacks.

b. To understand guidelines and recommendations offered by MyPyramid.gov.

3. **Time allotted**: 2 hrs

4. **Preassessment**: Ask participants:

a. What is MyPyramid?

b. How is MyPyramid used?

5. **Content and sequence**:

a. Discuss purpose of MyPyramid in terms of recommendations for physical activity and daily servings of each food group

b. Explain the role of physical activity and balanced eating

c. Illustrate how to read labels based on recommended serving sizes

d. Describe the "Soul Food Pyramid" (http://www.soulfoodpyramid.org) as a culturally relative source

6. **Learning Activities**:

a. Participants will access http://www.MyPyramid.gov in class

b. Using the recommendations provided by MyPyramid.gov, participants will indicate the following:

-Which categories do their favorite snacks and foods belong to?

-What is a serving size; how many servings does MyPyramid recommend per day for each food group?

-How to increase or decrease servings from any or all food groups.

7. **Materials**:

--Blackboard

--Computer/projector to access MyPyramid.gov

-- Handouts

--"MyPyramid mini-poster" (USDA)

--"Use MyPyramid to Make Healthy Choices"

--"New Soulfood Pyramid" (Hebni Nutrition Consultants, Inc.)

--"What's in the Nutrition Label" (Eat Smart Move More)

--"Label Language" (Eat Smart Move More)

--Nutrition fact labels

8. **Evaluation**:

a. Participants will describe 3 benefits of using MyPyramid recommendations for diet and physical activity.

b. Participants will identify 3 healthy foods and snacks in terms of fat, sodium, and dietary fiber content.

WEEK 4. Smart Shopping and Balanced Eating

Justification: Phase I participants expressed concern about the affordability of healthy foods; fast food was preferred because of convenience, taste, and low cost. Participants expressed that vegetables do not taste good.

2. **Objective**:

a. To illustrate that meals prepared at home can be convenient, healthy, and cost effective

b. To identify time and money saving strategies while grocery shopping.

3. **Time allotted**: 2 hrs

4. **Preassessment**: Ask audience:

a. What their daily food choices are.

b. How often do they buy fast food?

5. **Content and sequence**:

a. Describe ways to include daily servings of fruits and vegetables into diet.

b. Shopping smart and saving money; compare prices of healthy foods purchase from the grocery store to the cost of snack items from vending machines.

6. **Learning Activities**:

a. Compare weekly cost of food prepared at home to weekly cost of eating fast food.

b. Plan weekly meals using food models that include fruits and vegetables that cost less than $20 to prepare.

7. **Materials**:

--Blackboard

--Recipe cards

--Food models

--Calculator

--Handouts

-"Choosing More Fruits and Vegetables" (Eat Smart, Move More)

-"Shop; Get the Best for Less" (Eat Smart, Move More)

-Color Me Healthy Recipes; chicken pasta salad, oven fried chicken, easy chicken pot pie, mixed vegetable casserole (Eat Smart, Move More)

8. **Evaluation**:

a. Participants will identify/create 2 cost effective, healthy, meals as alternatives to fast food

WEEK 5. Healthy Snacks

Justification: Phase I participants indicate that overeating of unhealthy foods is a common response to eating when stressed. Phase I participants indicate that healthy snacks include fruits and vegetables, however, unhealthy snacks were preferred for taste and convenience.

2. **Objective**:

a. To identify healthy, convenient snacks can be prepared for under five dollars.

b. To identify appropriate serving sizes

3. **Time allotted**: 2 hrs.

4. **Preassessment**: Ask audience:

a. Open ended questions about snacking

b. What makes a good snack?

5. **Content and sequence**:

a. Describe motivations of overeating snacks

b. Provide nutritional facts for common snacks per serving size.

c. Compare portions of healthy vs. unhealthy snacks that are equal in calories to show that healthier snacks are larger in quantity than unhealthy snacks.

d. Healthier, cost effective alternatives to sweet and salty snacks that can be made at home

6. **Learning Activities**:

a. Participants will prepare a modified version of Chex Party Mix ®

7. **Materials**:

--Flip chart/blackboard

--Nutrition fact labels

--Food models

--Empty snack bags for unhealthy snacks (potato chips, cookies, candy) and healthy snacks (low fat granola bars, raisins, baked potato chips, whole grain crackers, cheese, peanut butter)

--Handouts

-"Eating Smart on the Run" (Eat Smart, Move More)

-"What Counts as a Serving" (Eat Smart, Move More)

-Copy of Modified Chex ® Party Mix recipe

8. **Evaluation**:

a. Participants will identify 5 qualities of healthy snacks that are convenient and cost-effective alternatives to unhealthy snacks.

WEEK 6. Eating Well Throughout the Day/Meal Planning

Justification: Phase I participants indicate that convenience is a barrier to eating healthy foods. Specifically, planning meals required too much time. Many phase I participants indicated that they do not eat breakfast and are likely to overeat when meals are skipped.

2. **Objective**: To illustrate how planning meals during the week can reduce the likelihood of sporadic eating/overeating throughout the day

3. **Time allotted**: 2 hrs

4. **Preassessment**: Ask audience:

a. Open ended questions about meal planning

b. Open ended questions about difficulties associated with meal planning.

5. **Content and sequence**:

a. Describe benefits of developing a regular eating routine

b. Time management and meal planning

c. Illustrate how planning weekly meals saves money and time

6. **Learning Activities**:

a. Participants will play "Meal Planning More or Less" game (Univ. Wisconsin Extension Nutrition Education Program)

7. **Materials**:

--"Meal Planning, More or Less" game

--Handouts

-"Eating Smart at Home; Plan, Shop, Fix, and Eat" (Eat Smart, Move More)

-"Eating Smart at Home: Plan, Know What's for Dinner" (Eat Smart, Move More)

8. **Evaluation**:

a. Participants will identify 3 advantages of planning meals ahead of time.

WEEK 7. Cooking and Eating Together

Justification: Phase I participants indicate they would like their children to make healthier food choices, however there is difficulty for children to accept new foods because of taste and appearance.

2. **Objective**: To illustrate benefits of preparing and eating meals as a family

3. **Time allotted**: 2 hrs

4. **Preassessment**: Ask audience:

a. Open ended questions about cooking with their family

b. Types of foods that they like to cook with their family

5. **Content and sequence**:

a. Benefits of cooking as a family (↓ picky eating habits, improved eating habits and health in children)

b. Cooking together encourages healthy eating habits and makes mealtimes more pleasant

6. **Learning Activities**:

a. Group discussion of how to involve family members with meal preparation

7. **Materials**:

--Handouts

-"Parents Get Straight As with a Healthy Breakfast" (Meals Matter)

-"No More Food Fights" (Eat Smart, Move More)

8. **Evaluation**:

a. Participants will identify 3 ways to encourage their family to help with meal planning and preparation.

WEEK 8. Making Small Changes to The Diet; Eating when in Restaurants/fast food

Justification: Phase I participants expressed concern about eating too much fast food and would like healthier alternatives to order at fast food restaurants. Fast food consumption was highly popular among focus group participants due to convenience and low cost.

2. **Objective**: To learn how to make healthy choices in restaurants and when eating outside the home

3. **Time allotted**: 2 hrs

4. **Preassessment**: Ask audience:

a. Open ended questions about improving diet

b. Open ended questions about making healthy choices in restaurants

5. **Content and sequence**:

a. Review benefits of meal planning vs. eating fast foods

b. Review purpose of reading labels

c. Describe how making small changes to the diet can create healthier habits

6. **Learning Activities**:

--Discussion of nutrition facts listed on several fast food and sit-down restaurant menus

--Demonstration of fat and salt content of foods served in restaurants

-- "How Much Salt is in That" and "How Much Fat is in That"

7. **Materials**:

--"How Much Salt is in That"

--"How Much Fat is in That"

-- Menus for several fast food and sit-down restaurants

8. **Evaluation**:

a. Participants will identify 3 ways to make healthier choices when ordering food at restaurants

APPENDIX G- FOCUS GROUP RECRUITMENT QUESTIONNAIRE

Date: ____/_____/_____
Full Name: _____
Address:
_____
Phone: _

1. How would you identify yourself
   01) African American
   02) Black
   03) Other _____
   99) Refused

The Household

2. How many people including yourself live in your house/apartment? _____
3. How many people 18 years or older, including yourself, are there in your household?
4. How many children between 13-17 years of age are there in your household?
5. How many children between 6-12 years of age are there in your household? _____
6. How many children between 0-5 years of age are there in your household? _____
7. Are you the main caretaker of at least one child that is under the age of 12?
   01) Yes
   02) No
8. Are you the main meal preparer for your household?
   01) Yes
   02) No
   03) Don't know
   99) Refused
9. From these choices, which best describes the total amount of money your household receives per month from employment and/or government assistance?
   01) $0-$500
   02) $500-$1000
   03) $1000-1500
   04) $1500-$2000
   05) More than $2000; how much? $_____
   88) Don't know
   99) Refused